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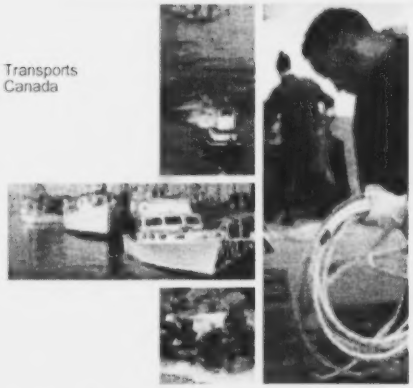
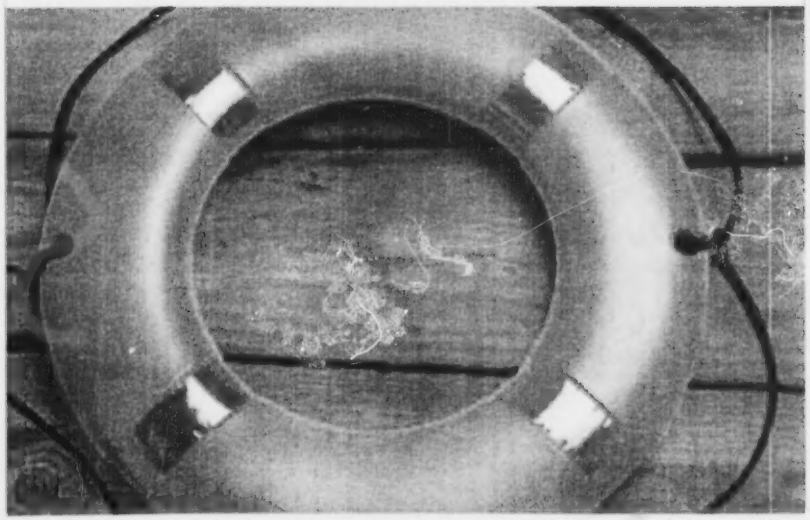


Small Commercial Vessel

safety guide



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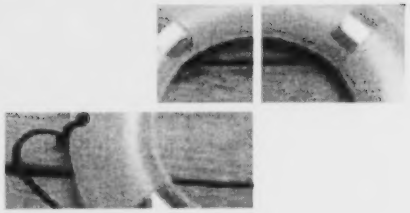

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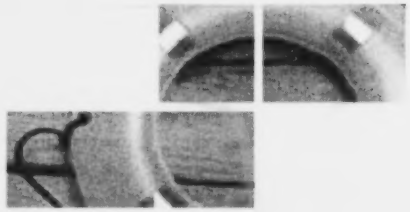


introduction

Thinking Ahead

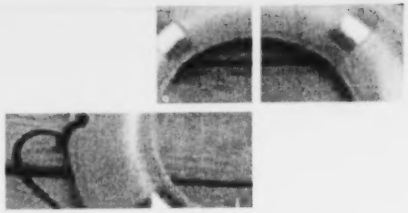
Accidents don't just happen. Often conditions causing vessel loss and casualty could have been averted by thinking ahead about safety. Unsafe water conditions and failures of equipment and crew, together, can allow a random gathering of events to become an accident... sometimes with tragic results. To prevent tragedy, vessel operators need to be aware of what they can do in advance to protect against hazards.

Human error and equipment failure cannot be legislated out of existence. However, it is possible to increase the safety of commercial vessels by complying with regulations, applying best practices, increasing crew knowledge and improving vessel condition and emergency response. This guide will give you an overview of all these aspects.

Owners and operators of commercial vessels not exceeding 15 gross tons will find this guide a useful primer to ensure their vessel is seaworthy in all respects and properly equipped in event of emergency. There is no attempt, however, to cover every aspect of the regulations and standards in this guide.

Understanding and complying with the *Canada Shipping Act*, the associated regulations and standards, and implementing prudent marine practices will improve marine safety. Like any good guide, this booklet will help you become more knowledgeable, and it will point you in the right direction to gain more information on the specific regulations that apply to the particulars of your vessel and situation. However, we need to remind you that this guide does not replace or supersede the laws and regulations on which it is based.

You have a duty to make yourself thoroughly familiar with the laws and regulations that apply to your vessels. Don't accept safety hazards as the cost of doing business. The majority of risks can be controlled and defended against, with this essential guide as the starting point for new and experienced commercial vessel owners and operators alike.



who should read this guide

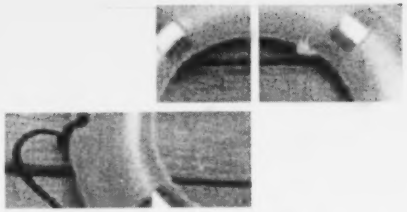
This guide is aimed at owners and operators of small commercial vessels. For the purpose of this guide, a small commercial vessel is a vessel no larger than 15 tons gross tonnage, that is not a fishing vessel or a pleasure craft. If passengers are carried, there are no more than 12 on board.

A *pleasure craft* means a vessel used for pleasure and not for a commercial purpose.

A *fishing vessel* means a vessel that is employed in the catching of fish, mammals, or other living resources from the sea, and that does not carry passengers or cargo, other than a cargo of fish.

A *passenger* is anyone on a ship except for the master, a member of the crew or a person engaged in any capacity on board the ship on the business of the ship, including special purpose personnel, a person carried in pursuance of the obligation to carry shipwrecked persons, or a guest on board the ship if the ship is used exclusively for pleasure and the guest is carried without remuneration or any object of profit.

For more information on whether the laws and regulations for small commercial vessels apply to your particular situation, Please see *Application*, page 1.



marine safety

Working with You

People don't need to be reminded of the importance of safety. That's why we work together with the entire marine community and Canadians from coast to coast to coast to minimize risk on the water. Transport Canada is the national authority over commercial ship safety in Canadian waters. The Marine Safety Directorate is responsible for the safe operation of ships, protection of life and property, and safeguarding the marine environment from ship-source pollution.

Our focus on safety covers every aspect of commercial vessels and their operations, including registration of ships, certification of officers, safety equipment, regulation of working conditions for crews, vessel construction, marine pilotage, navigation safety and pollution prevention. It also incorporates several important provisions that relate to compliance of domestic and foreign ships with international maritime conventions to ensure commercial vessels operate in a manner that is safe, efficient, environmentally sound, and responsive to the needs of all Canadians.

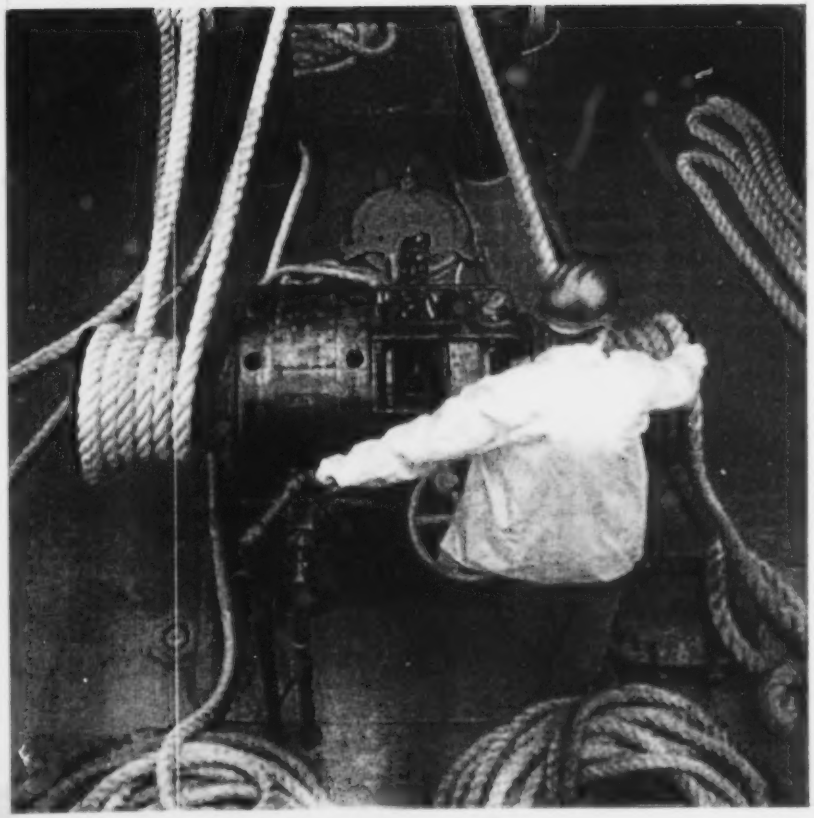
We Don't Do It Alone

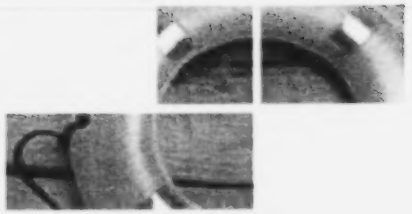
Partner safety agencies such as police forces and the Canadian Coast Guard also have important safety roles. However, as inspectors and other safety partners will not be with you as you go about your business, the onus is clearly on you, the owner or operator, to ensure the safe condition and operation of your vessel.

More Information

Transport Canada offices are located throughout Canada to answer questions you may have on safe marine practices, plan approvals, ship surveys and inspections, certification of shipboard personnel, licensing and registration, pollution prevention, and more. To find an office near you, please see the list of *Transport Canada Centres* in Appendix 2, page 101.

To research the specific rules and regulations that apply to your vessel, you can follow the references provided throughout this guide.





application

A Higher Standard of Care

Passengers and crews on small commercial vessels expect to arrive home safely. They expect that the operator has taken steps to ensure the vessel is safe and that the crew is trained to deal with emergencies. The regulations that apply specifically to your situation will depend on whether your vessel is commercial (non-pleasure), a fishing vessel, a special purpose vessel, or recreational (pleasure craft).

The regulations that apply specifically to your situation will depend on:

- Whether your vessel is commercial (non-pleasure craft) or recreational (pleasure craft);
- Area of operation, or voyage class;
- Environmental conditions including operating season;
- Type of vessel;
- Vessel size; and
- Whether your vessel carries passengers, as well as the number of passengers.

Regulations for commercial vessels are progressive in relation to the risk associated with the type and use of vessels. Requirements to safeguard a vessel and its occupants increase as risk increases. As the vessel size, number of passengers, operating area, and environmental risk factors increase, more stringent requirements are added to mitigate these risks. For example, less stringent requirements apply to small commercial vessels navigating sheltered waterways as opposed to vessels used at sea. Sea-going vessels require enhanced safety equipment, construction standards, and operator certification.

What Is a Non-Pleasure Craft?

A non-pleasure or commercial craft is a vessel charging for service, including the carriage of passengers. In most cases it is easy to distinguish a non-pleasure craft from a pleasure craft based on its use. If you are profiting in any way by transporting cargo or passengers, you are operating a non-pleasure craft.

A fare does not have to be paid for a person to be considered a passenger. Any type of business relationship between you and the person on board, where you receive any form of payment or profit for the use of the vessel, even if not directly from the persons carried, makes your vessel a non-pleasure craft.

Passengers or Guests

The *Canada Shipping Act* makes a distinction between passengers and guests: non-pleasure craft carry passengers; pleasure craft carry guests. If a person is onboard your vessel for recreational reasons, he or she will be considered a guest. However, if that person is carried on your vessel to gain payment or for any object of profit, he or she is a passenger. If you are carrying one or more passengers, regardless of the frequency, your vessel is a commercial vessel, not a pleasure craft, and you will be required to comply with the rules and regulations governing non-pleasure craft carrying passengers.

If a person is voluntarily sharing expenses with you, such as the cost of fuel or rental costs, and the vessel is used for recreational purposes only, the person will be considered a guest and the vessel will be defined as a pleasure craft. However, the sharing of expenses cannot be used as a means of circumventing the law.

Chartered Vessel

A chartered vessel may or may not be a commercial vessel. A chartered vessel is a recreational vessel, if under the ship charter agreement, the charterer has complete possession and control of the entire vessel, including the right to appoint its master and crew, and the vessel is only used for recreational purposes.

Fishing Vessels

Small fishing vessels have their own regulations covering construction and inspection. While this booklet contains information of a general safety nature that can be applied to fishing vessels, the focus of this guide is small, non-pleasure vessels other than fishing vessels. Owners and operators of fishing vessels should consult the *Small Fishing Vessel Inspection Regulations*. The *Small Fishing Vessel Safety Manual* TP 10038 available on line and from Marine Safety Offices is a useful reference.

Examples of Non-Pleasure Craft (Commercial) and Pleasure Craft (Recreational)

Non-Pleasure Craft

- Vessels transporting cargo for profit.
- Vessels carrying passengers.
- Vessels rented with a crew.
- A guided charter fishing vessel.

Pleasure Craft

- Privately owned vessels used for recreational purposes.
- A privately owned vessel used to entertain your guests.
- Rented vessels used for recreational purposes where friends are invited and contribute money for expenses.
- Vessel used to transport persons or goods as a favour.
- Vessel used as an essential means of transportation.
- Vessel provided with a rented cottage.
- Vessel occasionally chartered or rented out by owner to third parties for recreational purposes. Rental does not include crew.
- A rental vessel operated by the individual renting the vessels (no crew), including the period when an 'orientation skipper' is on board.
- Kayak, canoe, or personal watercraft (e.g., jet ski) lesson.

Special Situations

Contact a Transport Canada Centre for more information.

- Power or sail boating school with a contract in place for instruction only.
- Watercraft training vessels with a contract in place for instruction only.

Voyage Classifications

A voyage classification will be assigned to your vessel according to your area of operation. Environmental and other voyage restrictions may be specified in your vessel's inspection certificate.

In general, safety requirements will increase as risk factors associated with the voyage classification increase. As an example, vessels that operate far from shore and others that may encounter rough sea conditions will have more stringent requirements than vessels operating close to shore and on sheltered waters.

Most small vessels operate in Home Trade III or IV, Inland Waters, or Minor Waters. Please refer to the *Home Trade, Inland and Minor Waters Voyages Regulations* or contact the nearest Transport Canada Centre for more information.

More Information

- *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/070/csa076/csa76.html
- Guidelines on Non-Passenger Bare-Boat Charter Parties – TP 13699E
  www.tc.gc.ca/MarineSafety/tp/Tp13699/menu.htm
- *Canada Shipping Act*, Home Trade, Inland and Minor Waters Voyages Regulations CRC, Vol. XVI, c. 1430
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/020/csa027/csa27.html

registering or licensing your vessel

In Canada, you must either register or license a vessel that does not exceed 15 gross tons. This requirement does not apply to lifeboats or other survival craft accompanying a larger ship, which are inspected as a part of the equipment of the ship. All vessels over 15 gross tons must be registered.

Registration is the legal documentation of vessel ownership, similar in nature to the title system applicable for a house. To register a vessel, you must be a Canadian citizen or a permanent resident of Canada. A Canadian or foreign corporation may also register a vessel.

Licensing identifies a vessel, but does not imply ownership or title. A Bill of Sale is required for conclusive proof as to who owns a licensed vessel. No citizenship or residency restrictions apply, but the vessel must be principally operated and maintained in Canada.

About Registration

There are many advantages to registering a small commercial vessel. A Certificate of Canadian registry is a respected form of identification for international voyages. When buying or selling a registered vessel, title information can be determined from the Ship's Register. As well, registered vessels may be mortgaged and vessels under construction can be recorded for registration if you want to obtain a builder's mortgage.

Most aspects of owning a registered vessel do not affect how you operate or maintain your vessel. The differences from licensing occur in buying, selling, financing and cost.

Registration process

Submit an *Application for Registry* form, which you can obtain from Transport Canada through the Registrar of Ships at the intended Port of Registry or on the Transport Canada Web site. Return the completed form accompanied by the following:

1. Declaration of Ownership
A sworn statement before a Notary Public, Commissioner of Oaths or Registrar of Ships establishing your right as a Canadian Citizen, landed immigrant, or Canadian or Foreign corporation with an authorized representative.

2. Certificate of Survey
Measurement of your vessel by an authorized tonnage measurer or surveyor duly appointed by Transport Canada is required for registration. You should arrange for the vessel to be surveyed prior to application. Having measured the vessel, the surveyor will complete a *Certificate of Survey* and forward it to the Registrar of Ships at the intended Port of Registry.

Table 2-1 Tabular Tonnage Chart

Length Overall	Gross Tonnage	Net Tonnage
Less than 8 metres	4.6	2.3
From 8 m to under 8.5 m	5.0	2.53
From 8.5 m to under 9 m	6.0	3.01
From 9 m to under 9.5 m	7.0	3.56
From 9.5 m to under 10 m	8.0	4.17
From 10 m to under 10.5 m	9.5	4.85
From 10.5 m to under 11 m	11.0	5.59
From 11 m to under 11.5 m	12.5	6.41
From 11.5 m to under 12 m	14.5	7.30
Equal to 12 metres	15.0	7.78

Formal measurement is not required for monohull vessels that do not exceed 12 metres in length and a breadth of 4.8 metres. If you own a boat 12 metres in length or less, you can measure the vessel yourself and use a look-up table, or "tabular method," (Form 4A) to determine tonnage. This method cannot be used for houseboats, ships having a barge hull, or ships having more than a single tier deckhouse or a deckhouse occupying more than 70 percent of the overall length of the ship.

3. Proof of Title
Proof of title, free and clear of encumbrances, can be established either in the form of a *Bill of Sale* (Canadian), *Legalized/Notarized Bill of Sale* (Foreign), or *Builder's Certificate*.

4. Appointment of an Authorized Representative
The form "Appointment of Authorized Representative" is required if there is more than one owner of a commercial (non-pleasure) vessel. The form must be completed and signed by all of the owners, appointing one of the owners as the "Authorized Representative".

The form is also required if a foreign corporation is the owner. The form must be completed by the owner (foreign corporation), appointing a Canadian representative as the "Authorized Representative".

5. Notice of Ship's Name
Approval of a name for your vessel is obtained from Transport Canada. Your application can be made through the Registrar of Ships at the intended Port of Registry. The name you choose cannot be the same as or similar to another vessel registered in Canada. Also the name cannot be offensive to members of the public. To submit a vessel name, complete a Notice of Ship's Name form. Three alternative names should be provided.

6. Appropriate Fee
All fees are payable to the Receiver General of Canada through the Port of Registry and must be submitted at the time of application.

Vessel Markings

Once your boat is registered, you must display the name of your vessel, official number, and port of registry as specified by the Chief Registrar. This step is required to identify your registered vessel and validate the *Certificate of Registry*. The *Certificate of Registry* should be on board your vessel at all times. Requirements regarding vessel markings are shown on the reverse side of the *Certificate of Registry*.

Notice of Changes

The Registrar of Ships must be notified within 30 days of any change to the information shown on the *Certificate of Registry*, including an address change, vessel alteration, company name change, or transfer of ownership. The responsibility for notification rests with the vessel owner or the Authorized Representative. Failure to give notification will render your *Certificate of Registry* invalid.

About Licensing

Licensing Process

Many small commercial vessel owners choose to license their vessel because it is a simpler and less costly process. To license a vessel, you must complete an *Application for a Small Commercial Vessel Licence* form, available from Transport Canada through a Registrar of Ships, as well as any Customs Office of the Canada Customs and Revenue Agency (CCRA), or online. This form must be submitted, together with the fee and *Bill of Sale* or receipt to the Ship Registration Office, Ottawa. After the application is processed, you will receive a Vessel Licence, which includes a unique identifier number.

Keep your licence on board at all times. Once a licence number is issued to a vessel, it becomes the permanent licence number of that vessel, even after ownership changes hands.

Vessel Markings

To properly identify your vessel, the licence number must be displayed above the water line on each side of the bow or on a panel permanently attached to the vessel as close to the bow as practicable. The licence number must be clearly visible from each side of the vessel. You must use block letters not less than 7.5 centimetres (3 inches) high in a colour that contrasts with the background colour of your vessel.

Notice of Ownership or Address Change

Vessel owners should advise Transport Canada Marine Safety, Ship Registration Office, Ottawa of any changes to vessel licence information and, in particular, about changes to ownership or address information.

More Information

To register your vessel, contact the Transport Canada Centre nearest you. For a list of offices located throughout Canada, please see page 101.

You may also contact Transport Canada Ship Registration during business hours from anywhere in North America by using our toll-free helpline at **1-877-242-8770**, Fax: **1-613-998-0637**.

- How to Register a Ship or Boat in Canada TP 13414 (Amended version 2000-07-27) **www.tc.gc.ca/MarineSafety/Ships-and-operations-standards/registry.htm**
- Ships and Operations Standards Ship Registry **www.tc.gc.ca/MarineSafety/Ships-and-operations-standards/registry.htm**
- A Tabular Method form, Application for Small Commercial Vessel Licence Form and other online forms are available at **www.tc.gc.ca/forms/menu.asp**

vessel crewing and operator certification

Seafarers are responsible for the safe operation of the vessel and to be prepared for any emergency situation that may arise. The lives of those on board depend upon seafarers knowing their responsibilities, the safety procedure to be followed, and how to respond effectively and quickly in an emergency situation. Proper vessel crewing, training, and certification of seafarers are the highest priority in ship safety.

The *Crewing Regulations* state the minimum crewing requirements and crew certification and training needs. The size, configuration, propulsion horsepower, area of operation, and type of operation of your vessel will determine which aspect of the regulations will apply.

Responsibilities of Owner and Master

The owner of a vessel must provide the master with written instructions that set out the policies and procedures to be followed to ensure that the crew is familiar with the vessel and their duties and that they can effectively co-ordinate their activities when performing roles vital to safety and pollution prevention.

It is the responsibility of the master to ensure the crew is trained and able to effectively carry out these policies and procedures.

The owner and master are responsible for ensuring their crew meets competency and certification requirements.

You should consult with the local Transport Canada Centre for details on crewing requirements and certification of your particular vessel (see Appendix 2, page 101).

Crew Size

Every vessel in Canada must have a sufficient number of seafarers to efficiently perform the tasks and functions necessary for safety of life for the purpose of the vessel's intended voyage. Vessel configuration, type and location of emergency equipment, and area and type of operation are all factors in crew size evaluation.

To learn the crewing requirements for your particular vessel, contact the nearest Transport Canada Centre (see Appendix 2, page 101).

Certification

For all vessels over 10 tons and for passenger vessels exceeding 5 tons, a certificated master must be employed and on board when the vessel is engaged on a voyage. If your vessel is over 5 tons, carries one or more passengers and has a propulsion power of over 75 kW (100.6 hp), an engineer is required (see Table 3-1).

Dual Capacity Master and Engineer

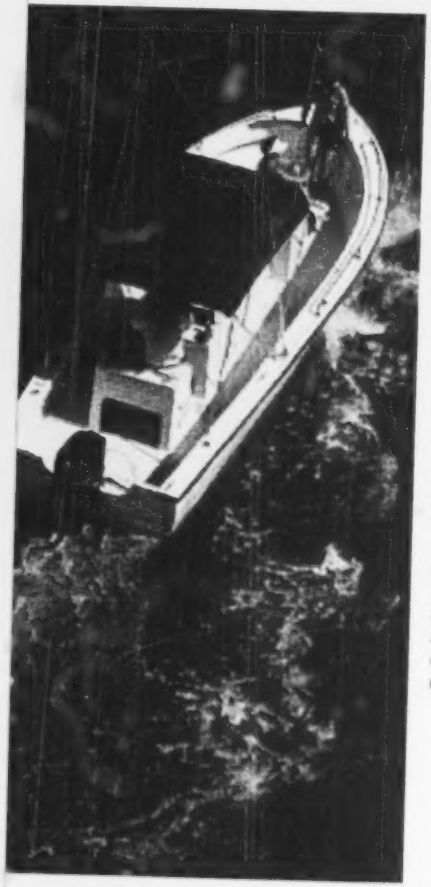
No person is permitted to act in the dual capacity of master and engineer on a ship that exceeds 20 metres in registered length. If your ship is less than 20 metres in length, a person holding a Master's Certificate and an Engineer's Certificate appropriate to the power rating of the main engines can act in a dual capacity provided:

- The engine is installed so that it can be controlled from the helm;
- Engine problems can be easily detected; and
- Repair is possible while keeping navigational lookout.

The minimum number of seafarers that can safely handle the following emergency situations simultaneously determines crew size:

1. Safely launch survival craft (generally one qualified person for each required life raft).
2. Handle fire-extinguishing equipment at any one location on the ship and operate the ship's pumping and emergency power system.
3. Keep a continuous watch when at sea on the frequency 2182 kHz (MF) or 156.8 MHz (VHF) Channel 16, or both by a qualified operator.
4. Maintain a deck watch while under way or under certain circumstances; for example, when passengers are on board, while securely anchored or moored.

At least one crew member, 18 years of age or over, must be on board to render assistance, unless the vessel is only operated in calm water and the person acting in dual capacity can single-handedly rescue a person overboard, and is capable of efficiently launching survival craft and handling other appropriate life saving equipment.



Inspection of Seafarer Proficiency

Knowledge of safety procedures and the efficient and proper use of safety equipment is essential to ensuring the safety of your vessel, crew, and passengers. The lives of others depend upon the correct emergency response in a distress situation.

Transport Canada inspectors are required to assess the ability of crews to respond correctly in distress situations. For the person in charge of a passenger vessel less than 5 tons or a non-passenger vessel less than 10 tons, the Marine Safety inspector will ask questions related to safety, emergency and survival procedures, and may require a test voyage, as deemed necessary for evaluation. The operator will be expected to be familiar with the navigation rules, local conditions and hazards, operation of the vessel, use of safety equipment, specific operational and emergency procedures, and other safety-related roles and responsibilities.

Masters Certification

Where a small commercial vessel requires a master on board, the master must hold a valid Master's Certificate appropriate for the vessel and its area of service.

Every applicant for a Limited Master Certificate must pass oral, practical, and written examinations on subject matter appropriate to the area of operation and the type of ship to which the certificate relates. Please consult the nearest Transport Canada Marine Safety office to determine the requirements, based on vessel size and operation and voyage particulars, that apply in your case. Applicants for a certificate as Limited Master on a small commercial vessel up to 60 gross tons must complete the following:

1. Two months service on a ship of similar tonnage and engaged on similar voyages to the ship for which the certificate is sought.
2. Medical Certificate prescribed by the *Crewing Regulations* of the *Canada Shipping Act*.
3. a. Passenger vessels: Certificate of completion for Marine Emergency Duties for Small Vessel Safety; or

   b. Non-passenger vessels: Certificate of completion for Marine Emergency Duties Basic Safety of the Marine Emergency Duties Course or pass a practical examination using the ship's equipment for marine emergencies and answer questions relating to Basic Safety of the Marine Emergency Duties Course.
4. Marine First Aid Basic Certificate.
5. Examination.

A certificate as Limited Master is valid for a period of five years beginning on the date on which it is issued and only within the voyage area and on the ship or sister ship specified on the certificate.

Restricted Engineer

Every applicant for a Restricted Engineer, Motor Ship Certificate must pass an oral examination on the required engineering knowledge of motor ships.

The oral examination for restricted engineer will cover topics that relate to the vessel specified on the certificate. Topics may include but are not limited to the following:

- General principles of operation and maintenance of the machinery fitted in the ship.
- Elementary principles of gasoline or diesel ignition systems where gasoline or diesel engines are fitted.
- Operation of wet batteries.
- Charging and operation of fire extinguishers; use of fire hoses and nozzles.
- General precautions to be taken against the risk of fire.
- General principles of operation of heating boilers, where fitted.
- The dangers associated with the use of gasoline or diesel fuel in ships.
- Emergency stations, mustering passengers, alarms, procedures.
- Operation of life saving appliances, including methods and location of stowage.
- Pollution prevention and protection of the environment.

In addition, the applicant must provide the examiner with a certificate showing the successful completion of a course in Marine Emergency Duties with respect to small vessel safety from a recognized institution. Alternatively, the applicant must pass a practical examination on Marine Emergency Duties with respect to small vessel safety, using the ship's equipment for marine emergencies, and successfully complete an oral examination on that subject.

A Restricted Engineer, Motor Ship certificate issued by Transport Canada is valid for a period of five years beginning on the date on which it is issued and is valid only with respect to the voyage and ship specified in the certificate. To remain valid after five years, a certificate must be accompanied by a corresponding Continued Proficiency Certificate.

Radio Certification Requirements

The *Crewing Regulations* require that persons in charge of a radio watch onboard a ship required to be fitted with Digital Selective Calling (DSC) or INMARSAT equipment hold, at a minimum, a Radio Operator's Certificate Maritime Commercial (ROC-MC). This includes all ships required to fit VHF-DSC equipment on August 1, 2003. Due to the large numbers of vessels that will be fitted with this equipment, ship owners and operators are encouraged to enroll in an approved ROC-MC course well in advance of this date. Vessels equipped with non-DSC or INMARSAT equipment require an operator holding at minimum a Radio Operator's Certificate – Marine (ROC-M).

Masters Certification

Where a small commercial vessel requires a master on board, the master must hold a valid Master's Certificate appropriate for the vessel and its area of service.

Every applicant for a Limited Master Certificate must pass oral, practical, and written examinations on subject matter appropriate to the area of operation and the type of ship to which the certificate relates. Please consult the nearest Transport Canada Marine Safety office to determine the requirements, based on vessel size and operation and voyage particulars, that apply in your case. Applicants for a certificate as Limited Master on a small commercial vessel up to 60 gross tons must complete the following:

1. Two months service on a ship of similar tonnage and engaged on similar voyages to the ship for which the certificate is sought.
2. Medical Certificate prescribed by the *Crewing Regulations* of the *Canada Shipping Act*.
3. a. Passenger vessels: Certificate of completion for Marine Emergency Duties for Small Vessel Safety; or
   b. Non-passenger vessels: Certificate of completion for Marine Emergency Duties Basic Safety of the Marine Emergency Duties Course or pass a practical examination using the ship's equipment for marine emergencies and answer questions relating to Basic Safety of the Marine Emergency Duties Course.
4. Marine First Aid Basic Certificate.
5. Examination.

A certificate as Limited Master is valid for a period of five years beginning on the date on which it is issued and only within the voyage area and on the ship or sister ship specified on the certificate.

Restricted Engineer

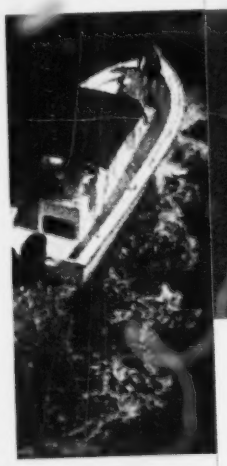
Every applicant for a Restricted Engineer, Motor Ship Certificate must pass an oral examination on the required engineering knowledge of motor ships.

The oral examination for restricted engineer will cover topics that relate to the vessel specified on the certificate. Topics may include but are not limited to the following:

- General principles of operation and maintenance of the machinery fitted in the ship.
- Elementary principles of gasoline or diesel ignition systems where gasoline or diesel engines are fitted.
- Operation of wet batteries.
- Charging and operation of fire extinguishers; use of fire hoses and nozzles.
- General precautions to be taken against the risk of fire.
- General principles of operation of heating boilers, where fitted.
- The dangers associated with the use of gasoline or diesel fuel in ships.
- Emergency stations, mustering passengers, alarms, procedures.
- Operation of life saving appliances, including methods and location of stowage.
- Pollution prevention and protection of the environment.

In addition, the applicant must provide the examiner with a certificate showing the successful completion of a course in Marine Emergency Duties with respect to small vessel safety from a recognized institution. Alternatively, the applicant must pass a practical examination on Marine Emergency Duties with respect to small vessel safety, using the ship's equipment for marine emergencies, and successfully complete an oral examination on that subject.

A Restricted Engineer, Motor Ship certificate issued by Transport Canada is valid for a period of five years beginning on the date on which it is issued and is valid only with respect to the voyage and ship specified in the certificate. To remain valid after five years, a certificate must be accompanied by a corresponding Continued Proficiency Certificate.



Radio Certification Requirements

The *Crewing Regulations* require that persons in charge of a radio watch onboard a ship required to be fitted with Digital Selective Calling (DSC) or INMARSAT equipment hold, at a minimum, a Radio Operator's Certificate Maritime Commercial (ROC-MC). This includes all ships required to fit VHF-DSC equipment on August 1, 2003. Due to the large numbers of vessels that will be fitted with this equipment, ship owners and operators are encouraged to enroll in an approved ROC-MC course well in advance of this date. Vessels equipped with non-DSC or INMARSAT equipment require an operator holding at minimum a Radio Operator's Certificate – Marine (ROC-M).

Table 3-1 Certification Requirements for Small Commercial Vessels*

Type of Operation	Vessel Size	Vessel Power	Area of Operation	Certified Master	Certified Engineer	Crew MED	Other Requirements
Non-passenger	< 10 ton	< 750 kW	Any voyage	Not required	Not required	Required	Person in charge demonstrate proficiency per CSA 335
Non-passenger	< 10 ton	> 750 kW	Any voyage	Not required	Required	Required	Person in charge demonstrate proficiency per CSA 335
Non-passenger	> 10 ton	< 750 kW	According to voyage class	Required	Not required	Required	–
Non-passenger	> 10 ton	> 750 kW	According to voyage class	Required	Required	Required	–
Passenger	< 5 ton	< 75 kW	Any voyage	Not required	Not required	Required	Person in charge demonstrate proficiency per CSA 335
Passenger	< 5 ton	> 75 kW	According to voyage class	Not required	May require	Required	Person in charge demonstrate proficiency per CSA 335
Passenger	> 5 ton	< 75 kW	According to voyage class	Required	Not required	Required	–
Passenger	> 5 ton	> 75 kW	According to voyage class	Required	Required	Required	–

Source: *Canada Shipping Act*, Crewing Regulations, SOR/97-[illegible]
www.tc.gc.ca/acts-regulations/ GENERAL/C/CSA/regulation[illegible]/csa079/csa79.html
Table Note:
- kW = kilowatt; 75 kW = 100.6 hp; 750 kW = 1005.8 hp
- Dual capacity master/engineer permitted
  if a vessel is < 20 m and < 750 kW and in compliance wi[illegible] per 35. (2) and (3) of the Crewing Regulations
- Please consult with your nearest Marine Safety office for [illegible] required

Marine Emergency Duties (MED)

Before completing six months cumulative sea time, every crewmember must obtain a Marine Emergency Duties (MED) certificate in basic safety at a recognized institution. MED training covers emergency response to first aid, fire, and abandon ship situations.

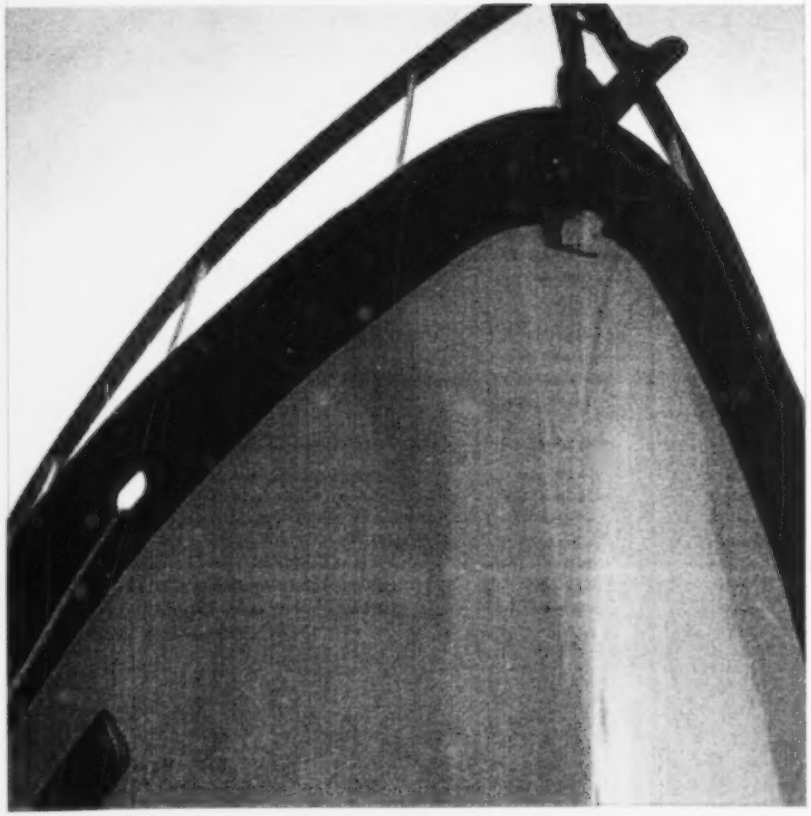
Occupational Health and Safety Training

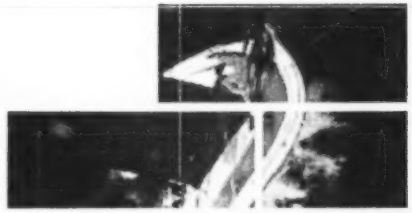
Every vessel owner and master must provide information, instruction, training, and supervision as necessary to protect the health and safety of crewmembers. This includes training related to the safety policy and procedures of a vessel. Employees must be made aware of foreseeable hazards and the precautions they should take to avoid accidents and injury.

More Information

- *Crewing Regulations* SOR/97-390.
- *Marine Certification Regulations* SOR/97-391
- TP1018 – Code of Nautical Procedures and Practices
- TP2293 – The Examination and Certification of Seafarers
- TP4957 – Marine Emergency Duty Programme
- TP10655 – Approved Training Courses
- TP13008 – Training Program in Marine First Aid

www.tc.gc.ca/marinesafety/TP/menu.htm





new vessels

Recording, Plans, and Approval

Recording a Vessel Under Construction

A ship that is about to be built or that is under construction in Canada may be temporarily recorded in the *Register* as a ship being built in Canada. This preliminary registration process allows the owner to use the vessel as security to obtain a builder's mortgage.

To record a vessel to be built or under construction, you are required to complete a *Description of Ship Proposed to be Built* form. This form can be obtained from Transport Canada through the Registrar of Ships at the intended Port of Registry. It is also available on the Transport Canada Web site. You will be given a number that must be displayed on the hull while the vessel is under construction.

Within 30 days after completion of the construction of a recorded vessel, the person in whose name the vessel is recorded shall notify the Chief Registrar that construction is complete and provide the name and address of the owner.

Naming a Vessel Under Construction

If you are planning to register a vessel under construction and would like a name approved while the vessel is under construction, you should reserve a name for the vessel. To reserve a name, you can apply using a *Notice of Name for a Ship* or *Change of Name of a Ship* form. There is a fee for processing this request, and when approved, the name will be reserved for one year. If you do not register the vessel within the year, or fail to apply for an extension, the reservation will be cancelled and the name will be open for reassignment to any other applicant.

Plan Approval and Construction

The construction standards for small vessels are derived from sound building practices and the need for the safety of passengers and crew, and protection of the marine environment. It is the responsibility of the designer, builder, owner, or operator to carefully consider the vessel's design, including necessary freeboard, stability, materials and equipment, to ensure it is adequately constructed for its intended purpose and the environmental conditions it may encounter. Assessment and resolution of safety and design issues in the design and construction stage is far more time and cost effective than having to deal with bigger and more costly changes once the ship is in service

Vessels under 15 tons do not require the submission of formal plans; however, it is prudent to submit plans and data for review by your Marine Safety inspector (see sidebar, *Plans and Data*).

Upon review of the information provided, the Inspector will reply stating whether or not your proposed plans are acceptable. The inspector may also request alterations sufficient to ensure that the vessel will meet the standards of construction laid out in the *Construction Standards for Small Vessels* TP1332.

After the vessel has been launched, all equipment has been placed on board, and it is ready for operation, the inspector will conduct a final inspection. If everything is satisfactory, the inspector will issue a *Notice of Inspection*.

Plans and Data

1. Hulls
2. Stability and Associated Seaworthiness
3. Machinery – Propulsion, Steering and Ship Service Engine
4. Machinery – Ship Service
5. Electrical Systems
6. Fire Protection Equipment
7. Life Saving Equipment
8. Navigation Lights

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101. You may also contact Marine Safety Ship Registration, toll-free at **1-877-242-8770** Fax: **1-613-998-0637**.

- Construction Standards for Small Vessels, TP1332
  www.tc.gc.ca/MarineSafety/Tp/TP1332/menu.htm.
- Description of Ship Proposed to be Built
  www.tc.gc.ca/pdf/84-0066.pdf
- Notice of Name for a Ship or Change of Name of a Ship
  www.tc.gc.ca/pdf/84-0042.pdf

construction standards TP1332

The *Construction Standards for Small Vessels* – TP1332 apply to all vessels, other than fishing and special purpose vessels, that do not exceed 15 tons, and that do not carry more than 12 passengers. The standards relate to the safety of the hull and mechanical systems, including ventilation systems, fuel systems, AC and DC electrical systems, propulsion and auxiliary machinery, and fire protection systems.

Construction Requirements

Hull Design Requirements

The successful performance of a ship's hull is essential to preventing structural failures and risk to safety. The hull must be designed and constructed with materials able to withstand the stress associated with the intended service of the vessel. Environmental factors such as water temperature, wave height, wind speed, current, tidal effect, temperature, and climate, as well as maximum anticipated loads, will dictate hull design and strength requirements.

The design and layout must ensure safety and structural integrity and also meet the vessel's operational requirements. Vessels, of all hull arrangements, need to use the calculations for maximum load, maximum persons and maximum power to layout the vessels operating parameters and meet the owner's requirements. Human error, equipment failure and the environment conditions cannot be predicted; therefore the regulations incorporate safety requirements to prevent incidents under normal conditions as well as unfavourable conditions. Stability is a very important consideration in the design and operations of a vessel.

Doors, Hatches, Windows and Port Lights

Doors, hatches, windows, and port lights must be of watertight construction, properly installed, and capable of retaining watertight integrity in all anticipated operational conditions. Windows, port lights, and skylights must be fitted with safety glass or equivalent material of adequate strength.

Through-hull Openings or Penetrations

Through-hull openings must meet accepted standards. Openings and hull penetrations should be kept to a minimum and fitted with efficient means of closure to maintain a vessel's watertight integrity. You should be able to securely shut off underwater penetrations. In a fire risk area, materials not susceptible to fire damage must be used for emergency closures.

Guardrails, Stanchions and Other Fall Prevention Systems

An exposed deck that is normally used by persons on board must be fitted with guardrails and stanchions, bulwarks, strong netting, or any combination of fall prevention systems to protect passengers and crew from falling overboard while the vessel is underway. On passenger vessels, guardrails, stanchions, bulwarks, and netting must be at least 91.5 centimetres (3 feet) above the weatherdeck. The distance between the horizontal rails should not be more than 23 centimetres (9 inches), unless strong netting is provided.

Ventilation Systems

Ventilation systems are essential to allow the supply of fresh air and the removal of exhaust and fuel odors, vapours, and noxious gases from all spaces on board the vessel. Vessel design will help dictate ventilation requirements. For example requirements for vessels with an open design will be different from a vessel of closed construction. Ventilation for heating and cooking systems should be carefully considered. Good ventilation is achieved by using the proper ducts, cowls and blowers to help remove fumes and odors from various spaces on board, including both gasoline and diesel engine compartments and battery storage areas. Ventilation also helps facilitate the pumping of these spaces.

Fuel Systems

Requirements for vessels powered by gasoline or diesel engines are included in this section. Fuel systems and their proper design and layout are essential in reducing the risk of an incident related to fuel. Items ranging from fuel fill lines to fuel tanks and supply lines are discussed in TP1332 including installation, material criteria, filters and warning labels.

Electrical Systems

The requirements for AC and DC electrical systems for vessels that have gasoline or diesel engines for propulsion or electrical generating power are set out in the Construction Standards – TP 1332. Also included are vessels that may have Liquefied Petroleum Gas or Compressed Natural Gas equipment on board. Electrical equipment ranging from circuit breakers and distribution panel board to electrical cables, emergency lighting and circuit protection is addressed.

Machinery

Machinery, if not installed, maintained and operated properly, can present dangers to those on board your vessel. Important safety considerations include the fitting of guards around moving parts, protection of people and flammable materials from hot engine exhaust systems, and corrosion prevention. Back-up and emergency systems, such as an alternative means of steering your vessel, should be carefully considered in light of the operation and purpose of your vessel.

Engine Starting

Charging facilities for the batteries should be automatic. Where there are two motors and an auxiliary battery, it is recommended that the two starter motor batteries be capable of being connected in parallel to provide additional starting power.

Operating Station/Helm Console Controls

Gauges and warning lights often allow you to spot trouble and take immediate corrective action before a problem becomes serious. The following indicators should be in clear sight at a vessel's operating station, where applicable:

1. Engine oil pressure and engine coolant temperature indicators for inboard engine.
2. Fuel capacity gauges, unless fitted with other adequate means to determine the fuel level.
3. Battery charging gauges.
4. Controls for navigation lights, steering equipment, etc.
5. Control and instructions for the blowers.
6. High bilge level indicator.
7. Fire detection panel and alarms.

Bilge Pumping Systems

Bilge pumping and water level detection systems are important safety features, especially for small vessels where the water in the bilges, without an effective means of removal, can quickly lead to capsizing or sinking.

Any commercial vessel over 6 metres is required to have at least one automatic bilge pump with an adequate flow rate. It is essential that the systems be designed for adequate pump-out time in relation to a vessel's size, design, and intended operations. Water level indicators and audible alarms at the helm are required for early detection of high water levels in all bilges and spaces below the waterline not readily observable from the helm. If your vessel includes overnight sleeping accommodations, audible high bilge level alarms are mandatory.

Bilge pump systems must be accessible for maintenance and to allow for manual pumping or bailing of watertight compartments. Discharge pipes must be arranged so that back-siphoning cannot occur under any operating condition, including trim and list. Suitable strainers must also be provided on the suction line from each compartment.

Bilge pumping systems must be installed and maintained in accordance with manufacturer's instructions and applicable regulations and standards. Back-up systems cannot be considered as a replacement for primary systems. Back-up systems or dual systems are only intended to take the place of the primary system in the event of a failure of the primary system.

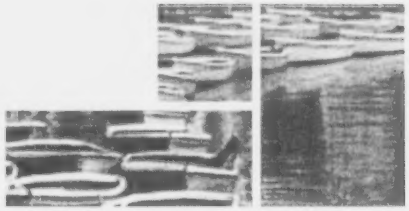
Fire Protection

Fire may result from a number of sources. While careful design, quality equipment and materials, and proper maintenance will reduce the chance of a fire starting, fires still happen. The Construction Requirements help to protect the people on board and prevent the loss of the vessel in the event of a fire. To allow people to escape to safety from anywhere on board, means of escape must be provided. Vessels with sleeping quarters require smoke and heat detectors. Portable fire extinguishers are required at various locations throughout the vessel. More information is provided in the Construction Standard – TP1332 and the *Fire Detection and Extinguishing Equipment Regulations*.

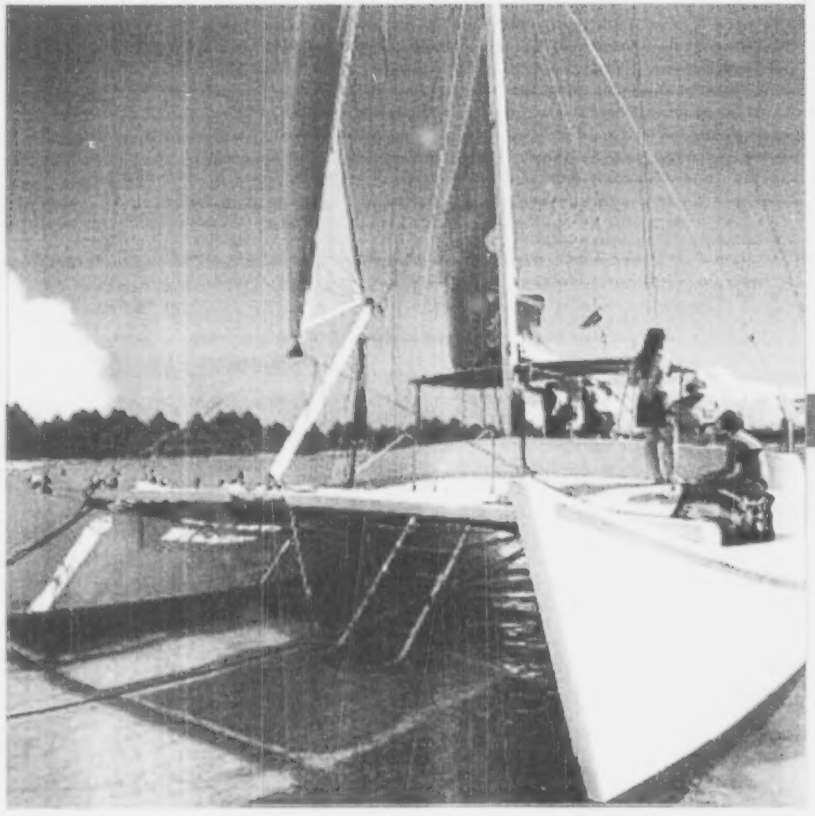
More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- Construction Standards for Small Vessels, TP1332
  www.tc.gc.ca/MarineSafety/Tp/TP1332/menu.htm



special purpose vessels



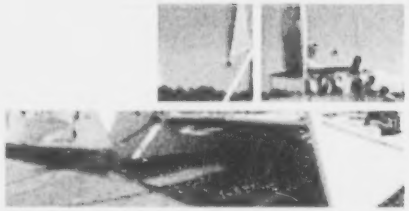
The requirements for certification of small vessels under 15 gross tons that have structural configurations and materials not within the scope of existing regulations, because of special purpose operating or design features, will be the subject of separate regulations or looked at by Marine Safety on a case-by-case basis. Examples of special purpose vessels or non-conventional craft using structural materials that are not well established or of unusual properties and proportions include air cushion vehicles, inflatable river rafts, multi-hulls, and amphibious craft. Special operating situations include sail and power boating schools and sail-training vessels.

The construction of special purpose vessels may require close involvement of the Marine Safety inspector throughout the plan review and inspection process before the vessel is first put into service.

Questions concerning regulations that apply to a particular special purpose vessel should be referred to your local Marine Safety office.

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.



safety equipment

Safe, Not Sorry

Safety should always be your priority when on the water. Canada's *Small Vessel Regulations* require you to equip your vessel with four types of safety equipment:

1. Life saving equipment (such as first aid kits, life jackets, and life rafts).
2. Vessel safety equipment (such as bailers, paddles, and anchors).
3. Fire safety equipment (such as portable and fixed fire extinguishers, fire axes).
4. Distress alerting equipment (such as flares).

As the owner or operator of a vessel, it is your responsibility to ensure you are in compliance with safety regulations and that all required safety equipment is on board. As well, you must make sure your vessel's safety inventory is properly maintained and correctly functioning and that personnel know how and when to operate the equipment. Ensuring that the right quantity and type of safety equipment is on board and in good working order can save lives, and protect your vessel and business. It's also the law.

Life Saving Equipment

Life Jackets

All too often those who drown were not wearing a life jacket or not wearing it properly. Life jackets are designed to keep a person's head above water and to help a person remain in a proper breathing position. To meet Transport Canada's requirements, you must have a life jacket of the appropriate size for each person aboard.

The life jackets you choose must be approved by Transport Canada and should be suitable for the type of activity in which the vessel will be engaged. For example, vessels that operate early or late in the season should be equipped with devices that offer some thermal protection. Red, orange and yellow are the only life jacket colours approved for use on commercial vessels.

It is your responsibility to ensure that life jackets are adequate and provide satisfactory protection to passengers. Life jackets are manufactured in various sizes. Check to ensure you have life jackets to fit the crew and passengers aboard your vessel. Extra supervision should be exercised with children to ensure there is a properly fitted life jacket for each child.

Special care must be taken with vessels that are closed or fitted with a canopy. In the event of capsizing, occupants may become trapped by the wearing of life jackets, which may prevent escape.

Consult with your local Marine Safety inspector to find out the exact safety requirements for your particular vessel. When buying a life jacket, always check the stamp or label to make sure it meets Canadian General Standards Board (CGSB) requirements and is approved by Transport Canada.

Life Jackets

Transport Canada approved life jackets are accepted for use on small commercial vessels. Life jackets may be of keyhole or vest type. Vests are more comfortable, however can be easily mistaken for a PFD (personal floatation device). Purchasers should examine the approval label to ensure that they are obtaining the correct type.

Life Jacket Maintenance and Testing

For life jackets to work, they must be kept in good condition. You should inspect each device on a regular basis for outer skin and stitching damage, mildew, leaks, insecure straps, or hardened stuffing. Use only mild soapy solution when cleaning. The use of oil-based solvents, such as gasoline, or strong detergents to remove stains can cause life jackets to deteriorate and lose buoyancy. For this reason, you should be cautious to prevent life jackets from coming in contact with gasoline, oil, or grease at all times.

Life Jacket Handling and Storage

You should always air-dry life jackets thoroughly before stowing them away. Avoid exposure to sunlight and never dry a life jacket on a heater or any other direct heat source. When life jackets are not in use, they must be stored in a dry, well-ventilated, easily accessible place on board the vessel. Life jackets should not be stepped on, or used as kneeling pads or seats. Placing any heavy weight on a life jacket can damage the internal buoyancy material.

Life Jacket Tips

It is recommended that all life jackets be individually marked with an identification system and that a record be kept of the date of purchase and the dates that you inspected the life jacket. This will assist with scheduling of future inspections and replacement planning.

Life Jacket Note

Personal Flotation Devices (PFDs) are designed for use aboard pleasure craft. PFDs are not approved for use on commercial vessels. Check to ensure the life jackets on your vessel are approved by Transport Canada.

Life Rafts and Rescue Platforms

No master wants to make the decision to abandon ship. However, in the event that sinking is likely, it's best to be prepared. For ship accidents at sea or on inland waterways, the most widely used rescue system is the life raft. It can be launched in almost all weather conditions and is designed to keep survivors out of the water while they await a rescue.

Life rafts are strongly recommended for any vessel in water with a temperature below 15°C. When purchasing one of these devices, you must make sure it comes in a size that can accommodate the maximum number of people that can be carried on your vessel.

Crews must be prepared for the launching of life rafts and other life saving appliances. Drills of the crew in their duties, including special operating instructions and the location of survival craft, are mandatory. You should conduct regular inspections to ensure all necessary equipment for each survival craft is in place and properly stowed.

Life rafts are required to be serviced at regular intervals by an approved service technician. Inspection and repair identifies defects or deterioration caused by physical damage from the pitching-and-rolling movement of your vessel and prolonged environmental exposure, such as from humidity and water spray, which can find its way into the life raft container.

Hydrostatic release mechanisms that require annual or other periodic servicing should be serviced at the same time as the life raft. Disposable release mechanisms should be replaced before the expiration date. Failure to service life rafts and release devices may result in the raft not properly operating when it is needed and could cost lives. For safety, make certain equipment works and your crew is prepared.

Every life raft and rescue platform should be stowed in a manner that will allow the raft to float free when the vessel is submerged. You can either place the life raft in sufficiently deep chocks, without lashings, to allow it to float free if the ship sinks or secure the life raft with lashings fitted with a hydrostatic release unit. The life raft must be stowed well clear from any fittings, rigging or any other construction features that may obstruct or prevent it from floating free and inflating after being automatically released. As well, the life raft must be easy to access for manual release.

To prevent a life raft from being damaged or lost because of weather, it must be properly secured. However, it is important not to secure the life raft in any way that may impede the hydrostatic release from operating properly when needed. In addition, make sure that the painter is properly secured to the vessel.

Lifebuoys and Buoyant Lines

Lifebuoys and buoyant lines are designed to be thrown to a person overboard who can grasp it to supplement his or her buoyancy until rescue. They are not designed to be worn in the water. These devices include:

- lifebuoys;
- buoyant heaving lines.

Lifebuoys

Lifebuoys for use on commercial vessels should be 762 mm in diameter and constructed of inherently buoyant material. A 610 mm lifebuoy is permitted on passenger vessels less than 8 metres in length, not exceeding 5 tons.

Lifebuoys should not be dependent on cork shavings or granulated material, any other loose granulated material, or any air compartment that depends on inflation for buoyancy. The surface of the device must be highly visible. The only approved colours for use on non-pleasure crafts are yellow, orange, or red quartered with white. Every device should have an unkinkable, secured grabline of good quality, not less than 9.5 mm in diameter. To increase visibility, your vessel's lifebuoy should have affixed to it retro-reflective tape at four equidistant points around the core to be visible on both sides of the life buoy. Commercial vessels over 8 metres in length must carry a lifebuoy with the required length of rope attached. Any commercial vessel over 5 tons is required to carry at least one 762 mm lifebuoy on each side of each passenger deck.

When buying a lifebuoy, check to make sure it is approved by the Department of Transport. It should bear an "Approved by the Department of Transport" marking and an approval number in the following format "T.C.xxx.xxx.xxx."

Horseshoe lifebuoys do not meet small commercial vessel requirements.

Buoyant Heaving Line

Passenger carrying vessels under 5 tons and less than 8 metres have the option, in place of a lifebuoy, of carrying a buoyant heaving line 15 metres in length or longer. The line can be packed into a rescue throw bag to assist in overboard emergencies.

Vessel Safety Equipment

Oars and Anchor

Vessels under 5.5 metres in length have the option of carrying two oars and rowlocks or two paddles. Vessels between 5.5 metres and 8 metres have an additional option of carrying an anchor with 15 metres or longer of cable, rope, or chain. If your boat is over 8 metres in length, it must be equipped with an anchor and a minimum of 15 metres of line.

Bailers and Pumps

If your vessel does not exceed 5 tons and is less than 8 metres in length, a bailer or manual pump must be part of its safety inventory. The bailer should be made of plastic or metal, have an opening of at least 65 square centimetres, and should have a capacity of 750 ml or more. Vessels 8 to 12 metres have to carry a bailing device and a bilge pump.

Bilge Pumps

Every vessel over 12 metres in length is required to have installed an efficient bilge pumping arrangement. This arrangement should be in compliance with the *Construction Standards for Small Vessels* – TP 1332 (see page 26 for further information on automatic bilge pumps).

Fire Safety Equipment

Fire Extinguishers

The size and number of fire extinguishers required for commercial vessels depends on the size of the boat. Portable fire extinguishers are classified to indicate their ability to handle specific classes and sizes of fires. Labels on extinguishers indicate the class and relative size of fire that they can be expected to handle. Refer to the *Small Vessel Regulations*, Schedule III, Section 17 for a table of equivalents for fire extinguishers.

Fires on board a vessel are commonly caused by combustible liquids such as gasoline, oil, or grease. For this reason, your vessel should be equipped with a Type "B" extinguisher.

When purchasing an extinguisher, look for a square containing the letter "B". This symbol will be printed in black letters on a metallic or red background.

Every fire extinguisher is rated numerically to indicate the relative size of the tank (minimum extinguishing agent weight) and thus the size of the fire it can put out. The higher an extinguisher's rating, the larger the fire it can handle.

Extinguishers should be inspected monthly to make certain seals and tamper indicators are not broken or missing and that tank pressure remains in the operable range. Dry chemical extinguishers should periodically be inverted and shaken so that contents do not become compacted due to the motion of the vessel. Replace cracked or broken hoses and look for obvious physical damage, such as corrosion, leakage, or clogging.

You should avoid dry chemical extinguishers with corrosive properties. Marine type fire extinguishers are recommended because of their resistance to corrosion. CO_2 extinguishers are not to be used in spaces normally occupied by passengers or crew.

The *Small Vessel Regulations* do not address the automatic extinguishing systems that some vessels may have. Although your vessel may have this type of system, you must carry the required portable extinguishers.

Halon Fire Extinguishers Being Phased Out

Halon, as a fire suppressant, is being phased out in Canada. Refills of portable equipment will be banned after 2003. A fixed fire extinguishing system will be permitted one refill between 2005 and 2010 provided the system is replaced one year after that.

Fire Extinguisher Classification System

The class of fire extinguisher is based on the type of fire.

Class A Fire
A fire involving combustibles such as wood, cloth, paper, rubber, and some plastics.

Class B Fire
A fire involving flammable or combustible liquids, flammable gases, greases, and similar materials such as gasoline, oil, paint, and natural and propane gases.

Class C Fire
A fire of this nature is usually a Class A or B fire, but also involves energized electrical equipment. Wiring and electrical appliances are in this class.

Class D Fire
A fire involving certain combustible metals such as magnesium, sodium, or potassium.

Buoyant Heaving Line

Passenger carrying vessels under 5 tons and less than 8 metres have the option, in place of a lifebuoy, of carrying a buoyant heaving line 15 metres in length or longer. The line can be packed into a rescue throw bag to assist in overboard emergencies.

Vessel Safety Equipment

Oars and Anchor

Vessels under 5.5 metres in length have the option of carrying two oars and rowlocks or two paddles. Vessels between 5.5 metres and 8 metres have an additional option of carrying an anchor with 15 metres or longer of cable, rope, or chain. If your boat is over 8 metres in length, it must be equipped with an anchor and a minimum of 15 metres of line.

Bailers and Pumps

If your vessel does not exceed 5 tons and is less than 8 metres in length, a bailer or manual pump must be part of its safety inventory. The bailer should be made of plastic or metal, have an opening of at least 65 square centimetres, and should have a capacity of 750 ml or more. Vessels 8 to 12 metres have to carry a bailing device and a bilge pump.

Bilge Pumps

Every vessel over 12 metres in length is required to have installed an efficient bilge pumping arrangement. This arrangement should be in compliance with the *Construction Standards for Small Vessels* – TP 1332 (see page 26 for further information on automatic bilge pumps).

Fire Safety Equipment

Fire Extinguishers

The size and number of fire extinguishers required for commercial vessels depends on the size of the boat. Portable fire extinguishers are classified to indicate their ability to handle specific classes and sizes of fires. Labels on extinguishers indicate the class and relative size of fire that they can be expected to handle. Refer to the *Small Vessel Regulations*, Schedule III, Section 17 for a table of equivalents for fire extinguishers.

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When purchasing an extinguisher, look for a square containing the letter "B". This symbol will be printed in black letters on a metallic or red background.

Every fire extinguisher is rated numerically to indicate the relative size of the tank (minimum extinguishing agent weight) and thus the size of the fire it can put out. The higher an extinguisher's rating, the larger the fire it can handle.

Extinguishers should be inspected monthly to make certain seals and tamper indicators are not broken or missing and that tank pressure remains in the operable range. Dry chemical extinguishers should periodically be inverted and shaken so that contents do not become compacted due to the motion of the vessel. Replace cracked or broken hoses and look for obvious physical damage, such as corrosion, leakage, or clogging.

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The *Small Vessel Regulations* do not address the automatic extinguishing systems that some vessels may have. Although your vessel may have this type of system, you must carry the required portable extinguishers.

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The class of fire extinguisher is based on the type of fire.

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Class C Fire
A fire of this nature is usually a Class A or B fire, but also involves energized electrical equipment. Wiring and electrical appliances are in this class.

Class D Fire
A fire involving certain combustible metals such as magnesium, sodium, or potassium.

Fire Extinguisher Use

You should read and understand the instructions on your fire extinguishers. If a fire starts, be prepared to grab the fire extinguisher, activate it, and direct it at the base of the flames using short bursts and sweeping the hose from side to side.

If underway and a fire starts, position your boat so the fire is downwind and stop the engine. Order everyone to put on life jackets. Use extinguishers to control the fire and, if possible, shut-off the fuel source. Owners of fiberglass boats should remember that fiberglass is flammable and take extra precaution.

Distress Alerting Equipment

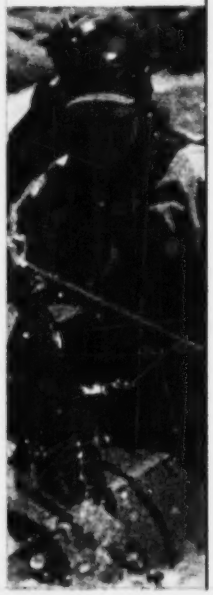
Pyrotechnic Signals (Distress Flares)

In an emergency, distress flares are vital to alerting others that you need immediate assistance.

All distress flares must be clearly stamped Transport Canada approved. Distress flares are valid for four years from the manufacture date stamped on the flare and should be disposed of after that time.

Safety Measures and Use

- Store flares in a watertight container to protect them from humidity.
- Store flares in a cool, dry, and easily accessible location away from any heat source.
- Check regularly and note expiry date for replacement.
- Always shoot flares into the wind and away from the vessel at a 45-degree angle to allow it to drift back over your position.
- Never use or store a flare close to combustible liquids or gas (e.g., propane, gas, oil).
- Should a flare not work, dispose of it immediately.
- Crew should be trained in using distress signals.
- Never point a flare at another person.
- Always treat flares as explosive devices.



Types of Pyrotechnic Signals

1. Type A Rocket Parachute Flares

- Rocket ejects a bright red parachute flare.
- Burns for a minimum of 40 seconds at 25 000 cd luminosity.
- 228 m minimum altitude parachute ejects; burns out 45.7 m from sea.
- Ignition and the rocket contained in a waterproof casing.

2. Type B Single or Twin Star Flares

- Producing, in rapid succession (max 15 seconds), two or more bright red stars.
- Stars burn for a minimum of four seconds at 5 000 cd.
- Automatic or cartridge firing device.
- If cartridge, two signals should be fired with 15 second intervals. The package should be marked with this requirement.
- Firing device and the cartridges, if any, should be waterproof and packed in a waterproof container.
- Vessel owners should check for approval for use of Type B equipment on commercial vessels.

3. Type C Hand-held

- Hand-held red flare.
- Burns for at least one minute at a minimum of 15 000 cd.
- Sheathed to prevent any dripping of burning material.
- Effective at night but emits gray smoke for daytime use.
- Limited surface visibility; suited for increasing visibility to air search and rescue.
- Contained in a waterproof case.

4. Type D Buoyant Smoke Signal (or hand-held)

- Emit a dense volume of orange-coloured smoke for a period of not less than 3 minutes when floating in calm water.
- Mechanically ignited device.
- Functions effectively when afloat in moderate seas.
- Used as day signal.
- Contained in a waterproof case.
- This device can be either hand-held or buoyant.

Required Safety Equipment

Type of Vessel	Commercial Passenger Vessel Not Exceeding 15 tons, not more than 12 passengers		
Vessel Total Length	<6.0m	6 – 8m	>8m
Transport Canada approved life jacket	●	●	●
Two oars with rowlocks Or two paddles Or an anchor with not less than 15m of cable, rope or chain	●	●	anchor
Bailer or manual bilge pump	●	●	●
Class B 1 Fire Extinguisher	●	●	●
Buoyant Heaving Line not less than 15m in length, with rescue quoit	●	●	●
610mm or 762mm life buoy attached to 15m buoyant line		●	●
Watertight Flashlight	●	●	●
Pyrotechnics	3 type A, B or C	6 type A, B or C	12 type A, B, C or D
First Aid Kit	●	●	●
Sound Signalling Device or Appliance	●	●	●
Navigation lights	●	●	●
Reboarding Device if freeboard >0.5m		●	●

* Vessels between 6m and 8m may use either a buoyant heaving line or a life buoy.

Source: *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487
  http://www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/070/csa076/csa76.html
- *Canada Shipping Act*, Life Saving Equipment Regulations, CRC, Vol. XVI, c. 1436
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/030/csa032/csa_32-a.html

Required Safety Equipment

Type of Vessel	Commercial Passenger Vessel Not Exceeding 15 tons, not more than 12 passengers		
Vessel Total Length	<6.0m	6 – 8m	>8m
Transport Canada approved life jacket	●	●	●
Two oars with rowlocks Or two paddles Or an anchor with not less than 15m of cable, rope or chain	●	●	anchor
Bailer or manual bilge pump	●	●	●
Class B 1 Fire Extinguisher	●	●	●
Buoyant Heaving Line not less than 15m in length, with rescue quoit	●	●	●
610mm or 762mm life buoy attached to 15m buoyant line		●	●
Watertight Flashlight	●	●	●
Pyrotechnics	3 type A, B or C	6 type A, B or C	12 type A, B, C or D
First Aid Kit	●	●	●
Sound Signalling Device or Appliance	●	●	●
Navigation lights	●	●	●
Reboarding Device if freeboard >0.5m		●	●

* Vessels between 6m and 8m may use either a buoyant heaving line or a life buoy.

Source: *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487

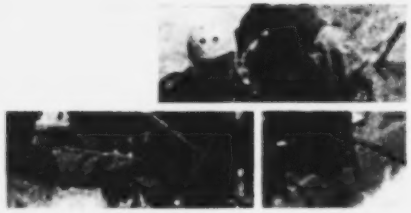
More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487
  http://www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/070/csa076/csa76.html
- *Canada Shipping Act*, Life Saving Equipment Regulations, CRC, Vol. XVI, c. 1436
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/030/csa032/csa_32-a.html

Pre-departure Safety Checklist

1. What is the weather forecast? Do conditions match the forecast?
2. Any local hazards or boating restrictions on route?
3. Do you have updated charts of the operating area?
   Is the navigational equipment working?
4. Have you given a responsible person a Sail Plan?
5. Are there enough life jackets of appropriate size for everyone on board, including children?
6. Is all safety equipment in good working order?
7. Is your VHF radio or other communication equipment working properly?
8. Are navigation lights working properly?
9. Are the first aid kit, basic tools and spare parts onboard?
10. Is your drainage plug in place?
11. Is your bilge pump free of debris and working?
12. Check the battery's charge and its fluid levels.
13. Did you check for oil and water leaks?
14. Did you check fuel lube oil and coolant levels, hoses and belts?



emergency procedures

Boat and Fire Drills

For a ship to operate safely, the owners, operators, and crew must embrace a safety culture and create an environment where precautions and safety are primary concerns. Smart operators make decisions with the safety of their passengers, crew and vessel a priority.

The safe operation of any vessel requires a keen knowledge of its handling characteristics and limitations. It also requires knowledge of the waters where the vessel is operating, including local weather conditions; water levels; low, slack, and high tides; currents, rapids, and white water; direction of water flow and other water conditions; overhead and underwater obstacles (bridges and underwater cable).

Boat and fire drills should be practiced regularly. Practicing responses to a variety of emergency situations will teach crewmembers how to quickly and properly react to any situation. Operators should think about emergency situations and be able to answer "What would I do if" type questions so they can respond decisively if the question becomes, "What do I do now?"

To help avoid an actual emergency, it is good procedure to run through a safety checklist before departure (see sidebar, *Pre-departure Checklist*). It is better to invest a few minutes at the dock making sure your vessel, engine, and equipment are in working order than spend hours stranded offshore in a potentially dangerous situation.

While at sea, on receiving a signal from any source that a ship or aircraft or survival craft is in distress, you should proceed to the assistance of the persons in distress, informing them if possible that you are on your way. If it is impossible or unnecessary for you to respond, you are required to enter in the official log-book the reason for failing to proceed to the assistance of those persons.

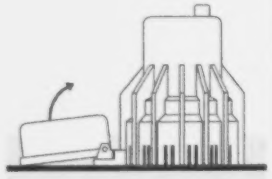
More Information

Contact your Transport Canada Centre to find out about the laws and regulations that apply to your particular vessel and situation.

- *Canada Shipping Act*, Boat and Fire Drill Regulations, CRC, Vol. XV, c. 1406
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/menu.htm

precautions

Avoiding Emergencies



Bilge Pump

Make sure automatic bilge pumps and alarm systems are in top condition and operating correctly before you embark. Test your bilge pumps by switching from the automatic to manual position on the bilge pump switch and check to see whether the pumps are operating. You should also check the automatic float switch regularly by manually raising it to make sure that it switches on the pump. Inspect the pump for debris or corrosion that might block intakes or prevent the float switch from floating up properly. If this switch fails, the pump won't turn on and your boat could take on sufficient water over time to do serious damage. Ensure that bilges are free from oil and dirt to prevent an unintended, illegal discharge of pollutants.

It is good seafarer practice to have a maintenance program that ensures bilge-pumping systems are reliable. Operating practices that provide your crew with the necessary training and familiarity with bilge pumping and alarm systems should also be put in place.

Sail Plan

Small vessel operators are encouraged to file a sail plan with a responsible person on shore, such as a person from their corporate office or a local marina, before heading out. If this is not possible, a sail plan can be filed with any Canadian Coast Guard Marine Communications and Traffic Services Centre by telephone, radio, or in person.

A sail plan is a voyage itinerary that includes travel route and basic details about your vessel. For long voyages, it is recommended that you file a daily position report, especially if your planned route or schedule has changed.

Be sure to deactivate the sail plan you have filed by reporting that you have returned or completed your trip to avoid an unwarranted search for your vessel.

The person holding your sail plan should be instructed to contact the Rescue Coordination Centre if you are overdue. The telephone number can be found at the front of most telephone books.

Safe Speed

You should maintain a safe speed at all times to avoid collision. Make certain you have a clear, unobstructed all-around view. Keep in mind, many boating collisions are caused by inattention and unsafe speeds.

Loads and Stability

Never load your vessel with passengers or cargo beyond its safe carrying capacity. Too many people or too much cargo will cause the vessel to become unstable, and possibly capsize. Always remember to distribute the load to keep the vessel's centre of gravity as low as possible. Secure it to keep it from shifting and affecting the trim and stability of your vessel (see *Vessel Stability*, page 51).

Severe Weather

In severe weather, turn on navigation lights, reduce speed to best handle sea conditions, and maintain enough power to allow steerage. Crew and passengers should put on life jackets. Ensure cargo and other objects are secure. Close and secure all doors, hatches and other openings. Make sure all overboard drains and freeing ports are open and clear of obstructions. On small boats, seat passengers on the bottom of boat near the centre line. If possible, head for the nearest port of refuge or shore that is safe to approach. Try to direct the bow of your vessel into the waves at about a 45-degree angle. Be sure to keep bilges free of water. If your engine fails, run out a sea anchor on a line from the bow to keep the boat headed into the waves.

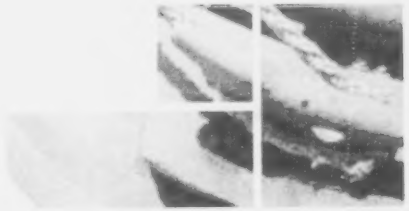
Emergency Alerting

Be aware of your situation. If there is concern about the safety of your vessel, crew, passengers, or cargo, do not hesitate to send an early alert. Refer to the jacket of this guide for emergency signals.

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- Bilge Pumping Systems: Early Detection Saves Lives. No.: 09/2002
  www.tc.gc.ca/marinesafety/Bulletins/2002/09_e.htm



safety briefings

Keeping Passengers Informed

Pre-departure safety briefings are similar to the type of briefing you receive after boarding an aircraft. Verbal instructions and demonstrations provide passengers with specific information to prepare and guide them in the event of an emergency.

Prior to departure, the person in charge of the vessel must ensure passengers are briefed on safety and emergency procedures relevant to the vessel. The safety briefing must be given in either official language, or both, as needed.

Passengers must be made aware of the location of life jackets closest to their position on the boat and the survival craft they should board in the event that the ship has to be abandoned. In addition, passengers must be given a demonstration on how to properly put on and secure each type of life jacket carried on board your vessel. Instruction on the location and use of personal protection equipment, boat safety equipment, and distress equipment is also mandatory.

It is your responsibility to make sure passengers understand the safety measures to be taken, including those relating to fire prevention, protection of limbs, the avoidance of ropes and docking lines, and the effect of passenger movement on boat stability.

Keep your passengers safe by keeping them informed.

More Information

To consult your local Transport Canada Marine Safety Office, please see Appendix 2, page 101.

- *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/070/csa076/csa76.html
- Passenger Safety Briefings, Bulletin No.: 06/2002, 2002-07-25
  www.tc.gc.ca/MarineSafety/bulletins/2002/06_e.htm

vessel stability

Warning Signs, Precautions

Of all accident types, founderings and capsizes caused by a loss of stability are the most likely to lead to a fatality on the water. Many of these accidents could have been avoided if operators took the necessary precautions and observed the warning signs.

A well-designed vessel will resist capsizing or foundering in severe conditions if it is operated properly. To reduce the likelihood of these incidents, keep these rules in mind:

- Be aware of external forces – wind, waves, and water depth. Always check the weather forecast before departure. Avoid rough weather conditions.
- Don't overload your vessel. Be aware of the amount of weight added to your vessel and available freeboard. Distribute the passengers and cargo evenly.
- Make sure that all cargo is well secured and remains secure during the voyage. Secure cargo below deck if possible.
- Partially filled water ballast and fuel tanks contribute to instability. Free surface liquids must be contained so their influence will not upset the balance of your vessel.
- Prevent water from entering the interior of your vessel by keeping hatches, doors, and windows closed, as practicable, when underway. Regular maintenance of gaskets and fastening devices will help to ensure watertightness.
- Any water shipped on board must be removed as quickly as possible. Scuppers and drains must meet design criteria and be kept in good working order.
- Open vessels and those with large well decks may be prone to swamping, which may lead to sinking or capsizing.
- Adjust course, speed, or both as practicable to minimize vessel motion, rolling in particular.
- Avoid sharp turns or turns at high speed when loss of stability is possible.
- Salt water is denser than fresh water. Your draft will increase and your freeboard will be reduced when leaving the sea and entering fresh water.

Stability Warning Signs

- Observe the stability and roll of your boat. Make sure the vessel's movement and reaction to sea conditions is normal, steady, and safe.
- Check to make sure your boat is visibly stable. It should not be listing to port or starboard or trimmed excessively by the bow or stern.
- Observe freeboard and check for flooding. A flooded vessel may appear stable when it is in fact not.
- Has the cargo shifted? Make sure the load is well secured and remains secure during the voyage.
- Make sure that bilge level alarms are operational. Unusual operation of bilge pumps may indicate an excessive amount of water is entering the interior of the vessel.

A combination of prevention efforts and awareness of the warning signs of instability, along with operator knowledge, can accomplish a great deal in reducing the number of boating fatalities caused by instability and capsizing.

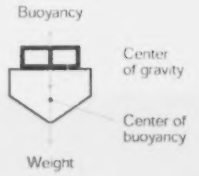
About Stability

Stability refers to the ability of a vessel to withstand high winds and seas and resist capsizing by returning to an upright position after being heeled over. Many forces influence the stability of a vessel in the water and each type of vessel reacts differently to heeling forces. Operators should be aware of how the design and loading of their boat interact with external forces of nature and affect their boat's stability. A properly designed and loaded boat should resist heeling forces when operated within its environmental limits (see Figures 11-1 and 11-2).

Adding weight above a boat's centre of gravity will change its stability. If the centre of gravity is raised too much, the boat will become unstable. As a result, less tilt is required to capsize the vessel (see Figure 11-3, *Added Load*). Removal of weight from below the centre of gravity also decreases stability.

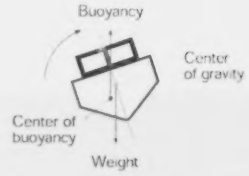
The most important factors in preventing a boat from capsizing are a well-designed, maintained, and loaded vessel and an experienced operator and crew. Preventing an unstable vessel condition and being able to recognize the warning signs when such a condition does occur can save lives. You should be on constant watch for loss of stability (see sidebar, *Warning Signs*).

FIGURE 11-1 – STABILITY



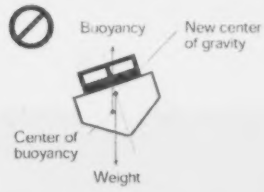
On even keel the downward force of gravity is equal and opposite the upward force of buoyancy.

FIGURE 11-2 – HEELING



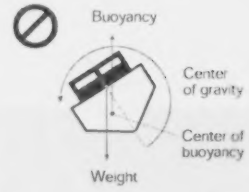
Buoyancy and gravity bring the boat back to even keel.

FIGURE 11-3 – ADDED LOAD



Weight added above the centre of gravity reduces the righting ability of the vessel.

FIGURE 11-4 – CAPSIZING



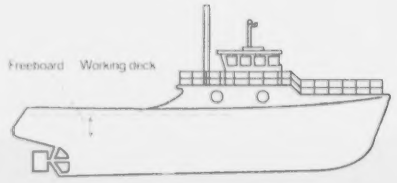
Center of gravity located too high will cause the boat to capsize.

Freeboard

Adequate freeboard is essential, so take care not to overload your vessel.

Freeboard is the distance between the water and the working deck of the vessel. If the deck edge goes under water when the vessel heels, the danger of capsizing is increased. An overloaded vessel will have too low a freeboard, and the deck may submerge with even a light heel caused by wind or water conditions.

FIGURE 11-5 – FREEBOARD

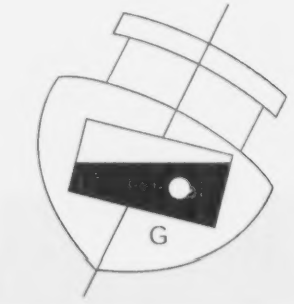


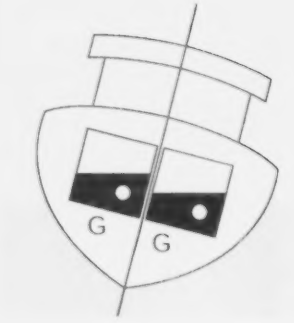
Free Surface Effect

"Free surface effect" influences the stability of a vessel. When a vessel with full tanks heels over, the tank's centre of gravity does not change, so it does not affect the vessel's stability. However, water on deck, liquids in holds, bilge water, and partially filled tanks will cause a shift of the liquid with the movement of the boat. When this happens, the centre of gravity also shifts, making the vessel less stable. This "free surface effect" reduces stability and increases the danger of capsizing.

A good operational practice is to minimize free surface effect by dividing tanks with baffles and fluid cargo holds with bulkheads and by keeping the number of partially filled tanks and holds to an absolute minimum.

FIGURE 11-6 – FREE SURFACE EFFECT CROSS-SECTION





More Information

- Construction Standards for Small Vessels TP1332
  www.tc.gc.ca/MarineSafety/Tp/TP1332/menu.htm

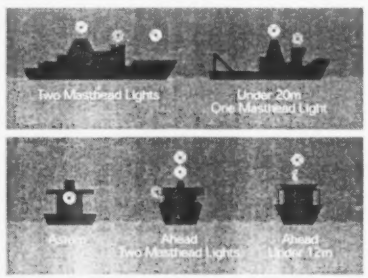
navigation lights, sound signal equipment and radar reflectors

Collision Avoidance

Navigation lights can help to prevent collisions by making your vessel and its direction of travel more evident to operators of other vessels. From the information provided by navigation lights, you can deduce the direction of travel of other vessels and whether they are at anchor or engaged in some other activity. Vessels in your vicinity will make collision avoidance decisions based on the information your lights provide.

The collision regulations require navigation lights to be shown from sunset to sunrise and during periods of reduced visibility. Make sure your vessel is equipped with the required lights of the right intensity and that they are correctly mounted. Proof is required that navigation lights comply with the requirements of the *Collision Regulations of the Canada Shipping Act*. The rules that apply to your boat depend on its length, type of propulsion, and the waters in which it is operating.

FIGURE 12-1 – EXAMPLES

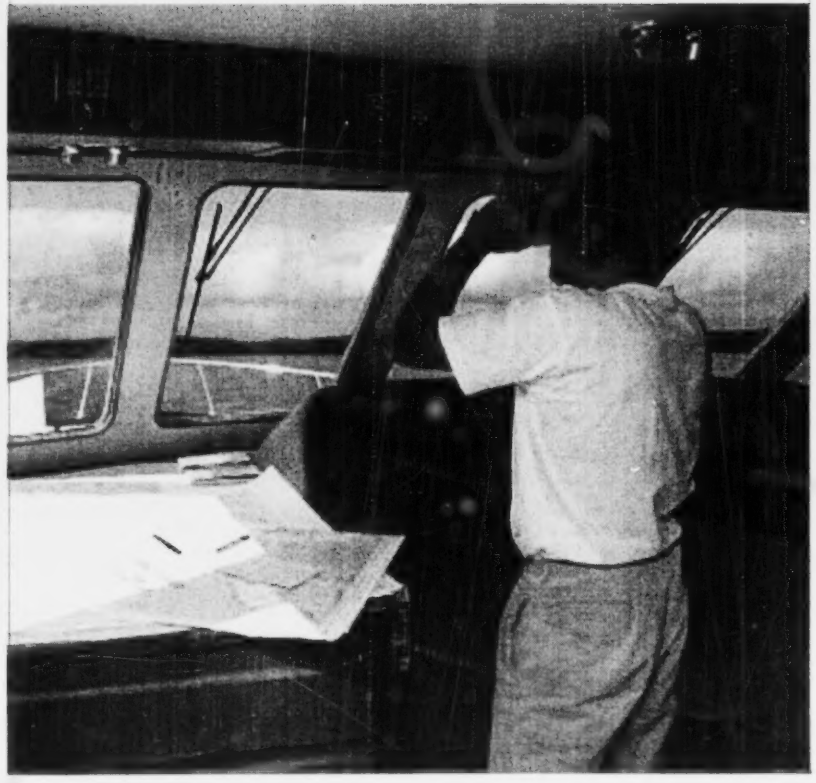


Power-Driven Vessels

Up to 50 Metres

Power-driven vessels 12 metres in length or more but less than 50 metres are, when underway, required to exhibit one or two masthead lights, sidelights, and a sternlight. Only vessels under 20m may have the sidelights placed in front of the forward masthead light.

*IMPORTANT: Only general information is provided here. It is the obligation of the vessel operator to be aware of the complete collision regulation requirements for their specific vessel.



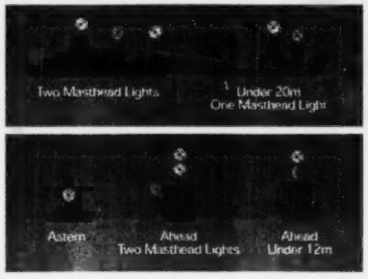
navigation lights, sound signal equipment and radar reflectors

Collision Avoidance

Navigation lights can help to prevent collisions by making your vessel and its direction of travel more evident to operators of other vessels. From the information provided by navigation lights, you can deduce the direction of travel of other vessels and whether they are at anchor or engaged in some other activity. Vessels in your vicinity will make collision avoidance decisions based on the information your lights provide.

The collision regulations require navigation lights to be shown from sunset to sunrise and during periods of reduced visibility. Make sure your vessel is equipped with the required lights of the right intensity and that they are correctly mounted. Proof is required that navigation lights comply with the requirements of the *Collision Regulations of the Canada Shipping Act*. The rules that apply to your boat depend on its length, type of propulsion, and the waters in which it is operating.

FIGURE 12-1 – EXAMPLES



Power-Driven Vessels

Up to 50 Metres

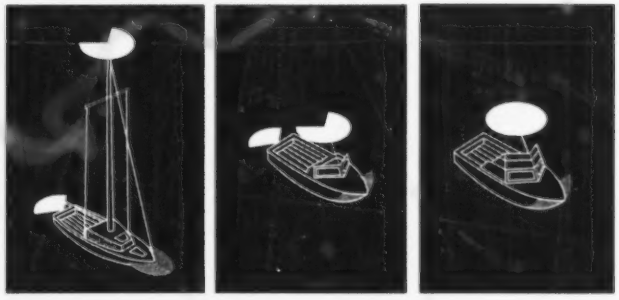
Power-driven vessels 12 metres in length or more but less than 50 metres are, when underway, required to exhibit one or two masthead lights, sidelights, and a sternlight. Only vessels under 20m may have the sidelights placed in front of the forward masthead light.

*IMPORTANT: Only general information is provided here. It is the obligation of the vessel operator to be aware of the complete collision regulation requirements for their specific vessel.

Less Than 12 Metres

Power driven vessels of less than 12 meters in length are required, when underway, to exhibit sidelights and either an all-round white light or a masthead light and a stern light (Figure 12-2).

FIGURE 12-2 – VESSEL LESS THAN 12 M



Anchored Vessels

A vessel of less than 50 metres in length at anchor is required to exhibit an all-round white light or one ball depending on the time of day and visibility, where it can best be seen, to indicate the vessel is anchored (Figure 12-3).

Vessels of less than 7 metres in length when anchored other than in or near a narrow channel, fairway or anchorage, or where other vessels normally navigate are not required to exhibit anchor lights or shapes.

FIGURE 12-3 – ANCHOR BALL

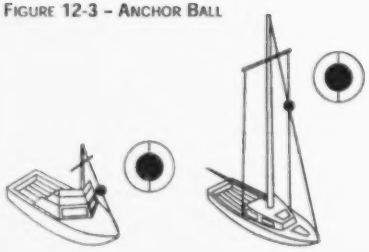


FIGURE 12-4 – SIDELIGHTS AND STERNLIGHT

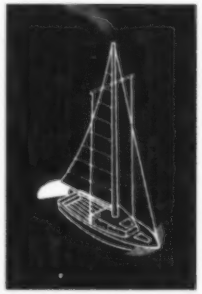
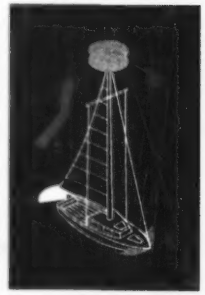


FIGURE 12-5 – COMBINED SIDELIGHT AND STERNLIGHT

FIGURE 12-6 – VERTICAL MOUNTED SIDELIGHTS



Sailing Vessels

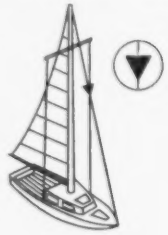
A sailing vessel underway is required to exhibit sidelights and a sternlight (Figure 12-4) or, if less than 20 metres in length, these lights may be a combined lantern carried at or near the top of the mast (Figure 12-5).

As an option, a sailing vessel may exhibit at or near the top of the mast, two all-round lights in a vertical line, the upper one red and the lower one green. These lights are shown in conjunction with the sidelights and sternlight but not with the combined lantern. (Figure 12-6).

Sailing Vessels Propelled by Motor

A vessel proceeding under sail when also being propelled by machinery must exhibit a conical shape, apex downward (Figure 12-7). Vessels less than 12 metres in length are not required to exhibit the day shape in the Canadian waters of a roadstead, harbour, river or inland waterway. Sailing vessels operating under machinery, or under sail and machinery are considered to be power-driven vessels and must display the lights prescribed by the *Collision Regulations* for a power driven vessel.

FIGURE 12-7 – CONICAL SHAPED APEX



Maintenance of Navigation Lights

Navigation lights should be maintained in good condition. Always check that lights are working prior to departing the dock. Be sure to carry spare bulbs of the proper size and power. It is a good idea to include navigation lights as part of your regular maintenance program.

Most lights use a rubber or foam gasket to seal against moisture. If you see condensation inside the lens, it means the gasket leaks. Inspect the gasket for proper placement, splits, or cracks and replace as necessary. Spray gaskets with silicone and electrical connection with a corrosion protector to extend fixture life. Be sure to polish the light, reflector, and lens to a shine.

Equipment for Sound Signals

The *Collision Regulations* require that you carry a sound signal device to alert other boats to your presence or operational intentions. Sound signals are necessary under certain circumstances, including meeting, crossing, and overtaking situations. In addition, all vessels are required to use a sound signal during periods of fog, heavy rain, or other conditions of reduced visibility.

A vessel 12 metres or more in length shall be provided with a whistle, a vessel of 20 metres or more shall be provided with a bell in addition to a whistle. The sound signalling device must have an audible range of at least 0.5 nautical miles for vessels under 20 metres, 1 nautical mile for vessels 20 to 75 metres, and be capable of a "prolonged blast" of four to six seconds duration.

*IMPORTANT: Only general information is provided here. It is the obligation of the vessel operator to be aware of the complete collision regulation requirements for their specific vessel.

Sound producing devices can be either hand, mouth, or power operated for commercial vessels less than 12 metres in length, provided the sound signalling device is able to make an efficient sound signal. The sound signalling devices must also be capable of a producing a four to six-second blast with a range of 0.5 nautical miles. A compressed air horn is an acceptable sound signalling device under the regulations.

Passive Radar Reflectors

A radar reflector can help a radar-equipped vessel detect your vessel. Vessels less than 20 metres in length or constructed primarily of non-metallic materials must be equipped with a passive radar reflector mounted above the superstructure, not less than 4 metres above the water. The reflector must be able to maintain its performance under the range of foreseeable environmental conditions.

The radar reflector requirement does not apply if your boat only operates in limited traffic, daylight, and favourable environmental conditions. Your vessel is not required to carry a reflector if compliance is impractical because of the small size of the vessel or if it only operates where other vessels do not use radar.

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Collision Regulations, CRC, Vol. XV, c. 1416
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/010/csa014/csa14.html
- *Canada Shipping Act*, Small Vessel Regulations, CRC, Vol. XVII, c. 1487
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/070/csa076/csa76.html
- TP1861 – Standards for Navigation Lights, Shapes, Sound Signal Appliances and Radar Reflectors (1991)
  www.tc.gc.ca/marinesafety/TP/menu.htm

radio equipment

VHF, DSC Two-way Communication

Communication Equipment

Two-way communication capability is essential in an offshore emergency situation. A marine VHF radiotelephone is mandatory on all passenger vessels in a VHF coverage area. If your vessel operates outside a VHF coverage area, you must have a reliable means of two-way radio communications with a responsible person on shore.

In the Great Lakes Basin, a vessel with more than six passengers should be equipped with two VHF radiotelephones, one of which may be portable.

If your vessel is engaged on a foreign voyage or a home-trade voyage carrying more than six passengers, it should be equipped with a VHF DSC radio installation.

DSC means Digital Selective Calling. DSC radios are based on satellite and digital technology and encoded with a unique nine-digit identification number that allows for private calling. This unique number, called your Maritime Mobile Service Identity Number (MMSI#), is much like a cellular telephone number.

VHF-DSC Radio

By August 1, 2003, ships of closed construction that are more than 8 m in length and ships carrying more than six passengers when engaged on foreign or home-trade voyages must be equipped with a VHF-DSC Radio.

The advantage of DSC is its emergency communication capability. Mayday calls are sent by simply touching the "DISTRESS" button on the radio. The mayday message includes the vessel's position (when connected to a LORAN or GPS receiver) and the identity of the boat from its MMSI#. The message repeats until acknowledged by another DSC radio. The recipient's DSC radio sounds an alert tone and displays the distressed vessel's coordinates and MMSI number on the radio readout.

Restricted Operators Certificate (ROC)

All VHF radio operators responsible for radio watch on compulsory fitted vessels are required to hold, at minimum, a Restricted Operator Certificate Maritime Commercial (ROC-MC). For more information, see page 11, *Vessel Crewing and Operator Certification*.

Radio Station Licence and Call Sign

Ships making or planning to make voyages to other countries, including the United States, should apply for a Radio Station Licence and radio call sign. This licence is renewable annually, for a fee. Ships operating within Canadian waters are exempt from Industry Canada, Spectrum Management (ICSM) licencing requirements.

Radio equipment fitted onboard Canadian ships must be type-approved by ICSM. The type approval number, which appears on a label affixed to the back of your radio will indicate this approval. When purchasing radio equipment, make certain it has been given ICSM approval. Equipment purchased outside of Canada may not have this approval.

Radio Station Requirements

Radio Installation

A VHF radio installation must be capable of transmitting and receiving communications using DSC on frequency 156.525 MHz (channel 70), as well as voice communications on frequency 156.3 MHz (channel 6), frequency 156.65 MHz (channel 13), frequency 156.8 MHz (channel 16), and any other frequencies, specifically assigned for the transmission of maritime safety information in the area in which the ship is navigating.

Radio Watch

Vessels that are compulsorily fitted with VHF equipment must begin radio watch on 156.8 MHz, Channel 16, at least 15 minutes prior to getting underway and continue until once again at anchor or moored. Ships voluntarily fitted should endeavor to keep watch on the frequency 2182 kHz (MF) or 156.8 MHz (VHF), Channel 16, when at sea, to ensure that distress, urgency, or safety traffic will be heard and responded to by as many stations as possible.

Log Keeping

Compulsory-fitted vessels must maintain a radio log of distress, urgency and safety communications specific to the vessel and a record of radio servicing and testing. This requirement is not mandatory for voluntarily fitted vessels, but it is strongly recommended that you keep a log, especially of all emergency traffic.

Mobile Phones

It is recommended that operators of vessels not requiring and not fitted with marine radio equipment carry a cellular phone, in areas where cellular coverage is available, or a satellite phone. Emergency response is available by dialing a Rescue Coordination Centre directly or, by dialing *16, routing your call through the nearest Canadian Coast Guard Marine Communications and Traffic Services Centre.

Remember that cellular and satellite phones are not substitutes for a marine radio. Making a call does not alert other boaters close to you, and in most instances, rescuers cannot follow the cellular phone signal back to your location.

Electronic Position Indicating Radio Beacon (EPIRB)

An Electronic Position Indicating Radio Beacon (EPIRB) is required on your vessel if it is 8 metres or more in length and less than 15 tons, and engaged on a home-trade voyage, Class I; a home-trade voyage, Class II; or a foreign voyage (see *Voyage Classifications*, page 3). An EPIRB should be located on board your vessel so it can be readily accessible or controlled near where the ship is navigated and manually released and carried into a survival craft. Certain vessels are required to fit the EPIRB in a float-free arrangement.

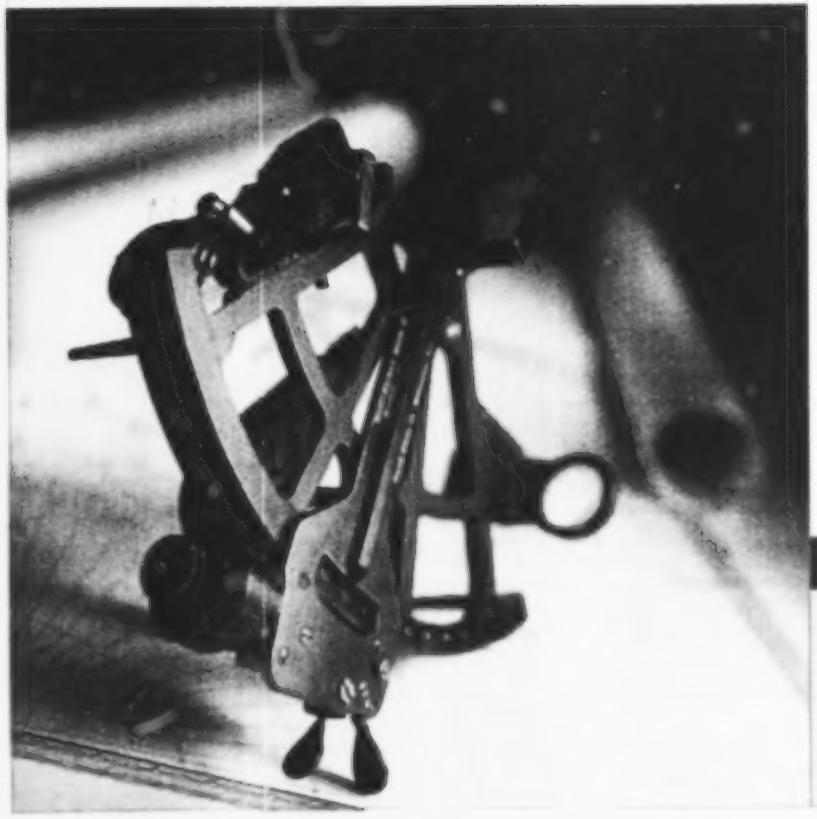
More Information

Contact your local Marine Safety Centre to find out the laws and regulations that apply to your particular vessel and situation.

- *Canada Shipping Act*, Ship Station (Radio) Regulations, 1999, SOR/2000-260
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/060/csa063/csa63.html
- *Canada Shipping Act*, Ship Station (Radio) Technical Regulations, 1999, SOR/2000-265
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/060/csa064/csa64.html
- *Canada Shipping Act*, VHF Radiotelephone Practices and Procedures Regulations, SOR/81-364
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/090/csa096/csa96.html
- *Canada Shipping Act*, Ship Radio Inspection Fees Regulations, CRC, Vol. XVII, c. 1472
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/060/csa062/csa62.html
- *Canada Shipping Act*, Crewing Regulations, SOR/97-390
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/070/csa079/csa79.html
- A map showing VHF coverage is contained within the publication entitled Radio Aids to Marine Navigation, which can be viewed at
  www.ccg-gcc.gc.ca/mcts-sctm/ramn_e.htm

navigation equipment

Compass, Binoculars, etc.



Compliance

Vessels must carry the navigation appliances and equipment as required by the *Canadian Shipping Act*. All devices must be properly installed, situated, and in good working order, including equipment fitted on board in excess of the requirements of the Act.

Equipment must be capable of continuous operation under the environmental conditions, such as vibration, humidity, and change of temperature, likely to be experienced on the vessel in which it is installed.

Required Navigating Appliances and Equipment

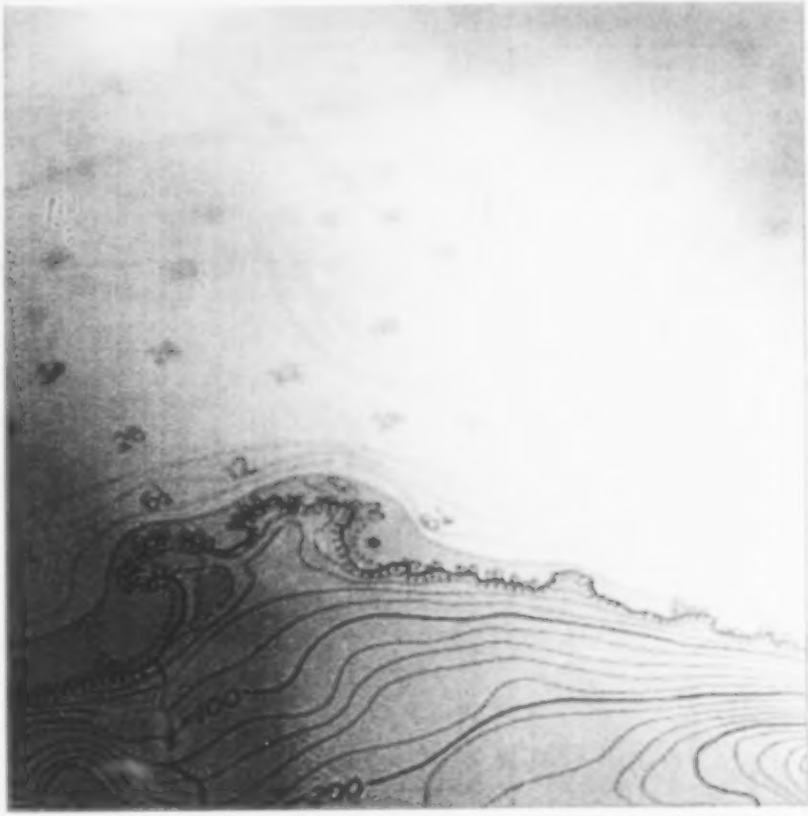
- Steering magnetic compass and a device for taking azimuths and terrestrial bearings (not required on vessels less than or equal to 5 tons navigated within sight of navigation marks).
- Every vessel required to carry charts must also carry navigating accessories necessary to permit the proper use of the charts to accurately determine the position of the ship (see *Nautical Charts and Publications*, page 69) and at least one pair of binoculars.
- Manufacturer's operating and maintenance manuals, as well as spare parts, fuses, and lamps for the navigating appliances and equipment.

More Information

Please contact your local Transport Canada Centre to find out the laws and regulations that apply to your particular vessel and situation.

- *Canada Shipping Act*, Navigating Appliances and Equipment Regulations, SOR/84-689
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/040/csa045/csa45.html

nautical charts and publications



The *Charts and Nautical Publications Regulations* of the *Canada Shipping Act* require that you carry the most recent editions of charts, publications and documents published for the area in which your vessel is navigating. This requirement may be waived if the person in charge of navigation has sufficient knowledge of shipping routes; lights, buoys and marks; and navigational hazards, as well as prevailing navigational conditions and weather patterns.

Canadian nautical charts and publications are available from over 800 authorized Canadian Hydrographic Service (CHS) Chart Dealers.

Authorized CHS Chart Dealers

For a list of authorized CHS chart dealers, visit: **www.charts.gc.ca**

or e-mail: **chsinfo@dfo-mpo.gc.ca**

Alternatively, please contact one of the following CHS Chart Distributions offices:

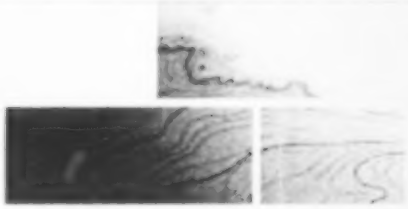
Central and Eastern Canada
CHS Chart Distribution Office
P.O. Box 8080
830 Industrial Ave, Unit 19
Ottawa, ON K1G 3H6
Tel.: (613) 998-4931
Fax: (613) 998-1217
E-mail: chs_sales@dfo-mpo.gc.ca

Pacific Coast
CHS Chart Distribution Office
9860 W. Saanich Rd.
Sidney, BC V8L 4B2
Tel.: (250) 363-6358
Fax: (250) 363-6841
E-mail: chartsales@pac.dfo-mpo.gc.ca

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Navigating Appliances and Equipment Regulations, SOR/84-689
  www.tc.gc.ca/acts-regulations/GENERAL/C/csa/regulations/040/csa045/csa45.html
- *Canada Shipping Act*, Charts and Nautical Publications Regulations, 1995, SOR/95-149
  www.tc.gc.ca/acts-regulations/GENERAL/C/csa/regulations/010/csa011/csa11.html



collision regulations

"Rules of the Road"

The *Collision Regulations* govern traffic behaviour and patterns to reduce the probability of collisions at sea. These regulations are the "rules of road". They set out the responsibilities between vessels under way and prescribe the obligations of vessels when meeting head-on, crossing, and overtaking when in sight of one another and when in restricted visibility. Different rules of conduct apply in conditions of restricted visibility. Consult the *Canada Shipping Act, Collision Regulations* for further information.

The *Collision Regulations* are largely consistent with international requirements, although some Canadian modifications have been introduced. They apply to all vessels, from small boats up to large freighters, on all navigable waters in Canada.

This booklet covers general rules of navigation that all small vessel operators should know and remember. For specific rules, see the *Canada Shipping Act, Collision Regulations*.

Constant Lookout

Operators must maintain a constant all-around visual and audio lookout. You are required to use every available means, including radar, and radio (if so equipped), to determine whether there is any risk of collision with another vessel.

Navigation

Safe Speed

Every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions.

In the Canadian waters of a roadstead, harbour, river, lake or inland waterway, every vessel passing another vessel or work that includes a dredge, tow,

grounded vessel, or wreck shall proceed with caution at a speed that will not adversely affect the vessel or work being passed, and shall comply with any relevant instruction or direction contained in any *Notice to Mariners* or *Notice to Shipping*.

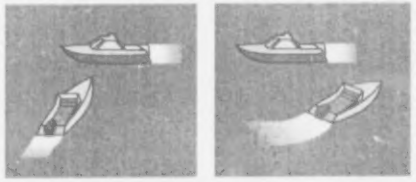
Power-Driven Vessels

A power driven vessel is any craft propelled by machinery, such as an inboard or outboard engine.

Crossing Situation in Sight of One Another

If a power-driven vessel approaches your powered vessel from your port side, maintain your course and speed unless it becomes apparent that the give-way vessel is not taking appropriate action. The other vessel is required to keep out of your way. You are the "stand-on" vessel.

FIGURE 16-1 – CROSSING SITUATION



If a power-driven vessel approaches your powered vessel from your starboard side, you must keep out of the way and avoid crossing ahead of the other vessel. The other vessel is the "stand-on" vessel and is required to maintain its course and speed.

Meeting or Head-on Situation in Sight of One Another

If a power-driven vessel approaches your powered vessel head-on or nearly head-on where there is a possible risk of collision, you should alter your course to starboard so that the other vessel will pass on your port side. The other vessel is required to take the same action so that you will pass on its port side.

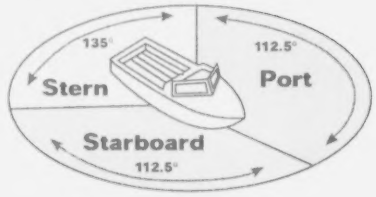
FIGURE 16-2 – HEAD-ON APPROACH

Passing or Overtaking Situation in Sight of One Another

If you are approaching another vessel to pass, you must keep out of the way of the vessel being overtaken. A vessel is considered to be overtaking another vessel if it approaches from a direction within her stern sector.

Keeping Out of the Way

FIGURE 16-3 – SECTORS OF A VESSEL



Power-driven vessels must keep out of the way of sailing vessels, vessels engaged in fishing, and vessels not under command, as well as rowing boats and other craft with restricted maneuverability. You are required to take early action to keep clear of these vessels unless being overtaken by one of them. Vessels less than 20m and fishing vessels shall not impede the passage of larger vessels within a narrow channel.

Whenever you are in doubt of another vessels intentions or actions, and when you are in sight of one another, indicate such doubt by giving 5 short blasts on the whistle.

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Collision Regulations, CRC, Vol. XV, c. 1416
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/010/csa014/csa14.html

* IMPORTANT: Different rules of conduct may apply depending on the specific environmental conditions. It is the obligation of the vessel operator to be aware of the complete collision regulation requirements for their specific vessel.

safe working and operational practices

Workplace health and safety onboard ships is governed by several pieces of legislation including the *Marine Occupational Safety and Health Regulations* of the *Canada Labour Code*. The purpose of the Code is to promote safe working practices and prevent accidents. To promote the co-operation of employers and workers, it is mandatory to appoint an employee as a safety and health representative. This person is required to participate in safety inspections, injury inquiries, and investigations.

Employees are required to report any accident or other occurrence likely to cause injury to their employer without delay. Employers must keep a record of all injuries, including the name of the injured or ill employee, the date, time, and place where the injury occurred, and a brief description of the injury and the cause. If an injury is serious, an employer must appoint a qualified person to carry out an investigation of the hazardous occurrence, notify the safety and health representative, and report the occurrence as soon as possible to a Health and Safety Officer of the Marine Safety Branch of Transport Canada within 24 hours of becoming aware of the incident. Notification is required by telephone or fax and should include the date, time, location and nature of any accident, occupational disease, or other hazardous occurrence. Serious injuries include fatality, disabling injury, and impairment of body function.

Each year, whether or not there has been a hazardous occurrence, employers are required to submit to Marine Safety an *Annual Hazardous Occurrence Investigation Report* (NHQ/LAB1145). This annual report is due March 1 for the 12-month period ending December 31. The minor injuries log, investigation reports (including police reports), and annual reports must be kept by the employer for a period of 10 years.

It is the responsibility of employers to ensure that personnel perform their work in the best conditions of safety and health. Personnel must be properly instructed in the dangers of their occupation and be aware of foreseeable hazards, as well as the precautions necessary to avoid accidents and injury. Employers should take special care to ensure newly recruited persons are properly instructed and aware of dangers onboard.

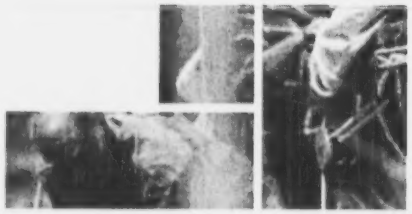
In an accessible place, employers must post a copy of Part II of the *Canada Labour Code*, the company safety policy, and other information related to safety and health. Warning notices cautioning personnel about hazardous situations and safety concerns should also be posted in prominent places on board.

Small vessel owners and operators should also make themselves familiar with provincial requirements respecting workplace safety. For example, in some provinces the Workers Compensation Board is active in the marine field.

More Information

Contact your local Transport Canada Centre to find out the laws and regulations that apply to your particular vessel and situation.

- Canada Labour Code, Marine Occupational Safety and Health Regulations, SOR/87-183
  www.tc.gc.ca/acts-regulations/GENERAL/C/clc/regulations/001/clc002/clc002.html
- *Canada Shipping Act*, Safe Working Practices Regulations, CRC, Vol. XVII, c. 1467
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/050/csa057/csa57.html
- Employer's Annual Hazardous Occurrence Investigation Report (Marine Occupational Safety and Health Regulations, Subsection 14.7(2))
  www.hrdc-drhc.gc.ca/fas-sfa/eforms/forms/lab1145b.pdf
- FAQ's relating to Marine Occupational Safety and Health
  www.tc.gc.ca/marinesafety/mosh/FAQ/menu.htm



maintenance

Schedule, Log, Checklist

Keeping your ship in top running order can avert a dangerous situation from arising, as well as prevent costly mechanical breakdowns. Safety can depend on how well a vessel is maintained and the ability of systems and components to perform as they were designed. Servicing your vessel according to a schedule will keep your vessel at peak performance, economy, and safety. It will also safeguard the environment, extend the life of your vessel, and increase its resale value.

A routine maintenance schedule and frequent checks of fluid levels and high wear items, the engine, hull, electrical system and accessories will help to ensure that your vessel can function at its designed level. Emergency maintenance may still be required, but this should be minimized. Defective gear or equipment should be dealt with immediately by way of repair or replacement. Immediate attention can save the cost of a large repair later, and it will help keep your vessel safe for passengers and crew.

It is a good idea to keep a log of repairs and replacement of parts. This will help you to keep track of equipment that needs regular servicing and parts that must frequently be replaced. For example, by noting the time interval for zinc replacements, you will get an idea of the rate at which they are consumed, which is mostly related to time, not engine hours, allowing for regular scheduling of future replacement.

Maintenance intervals should be determined according to the number of hours of service or number of months, whichever comes first. Follow the manufacturer's recommended maintenance schedule. Most engines normally require careful and complete inspection at 300 hour intervals. For a standard maintenance checklist, see sidebar, *Annual Maintenance Schedule*.

Remember, negligence in maintaining a vessel will eventually lead to an unsafe vessel. With a regular maintenance routine, your vessel will stay in the proper state of repair and safety.

Sample Maintenance Items

Hull

- Anti-fouling bottom paint and topside cleaning, waxing or periodic painting, depending on the hull material and condition. (Tin-based anti-fouling paints were phased out January 1st, 2003).
- All through-hull fittings and attachments should be inspected.
- Above decks all watertight and through-deck fittings should be checked, including cleats, stanchion mounts, hatches, ports, doors, antenna mounts and the hull to deck seal.
- The cabin interior should be checked for water and stains, which could indicate a leak and a weakening of materials. Repairs should be made immediately.

Machinery

- Regular oil and filter changes for the main engine and auxiliary generator. (i.e. at the hours of operation interval recommended by the manufacturer or annual, whichever comes first).
- All fluid levels should be regularly checked. The engine(s) should be inspected for any oil or fuel leaks.
- Gasoline engines should be tuned up annually, electrical parts, such as spark plugs, should be replaced as necessary.
- All hoses and drive belts should be routinely inspected and tightened. They should be replaced when worn or cracked.
- The starter motor and alternator should be inspected.
- Painted surfaces should be maintained and annually a light coating of oil applied to reduce corrosion.
- Transmissions and outdrive units should be inspected and serviced as required. Outdrive units should be pressure checked.
- Transmission fluids and gear oil should be checked for water and changed periodically.
- Universal joint, gimbal bearing, propeller spline and unit fittings should be greased.
- Bellows and water seals should checked and replaced as necessary.
- Check and replace the sacrificial zinc anodes on shafts, props, tabs and other underwater gear, as well as engine-mounted zincs on the underside of exhaust elbows or risers and on the end caps of heat exchangers to guard against corrosion.
- Outdrive unit should be cleaned and serviced.

Electrical System

- All circuits should be tested for proper operation. Exposed wiring, fuse/breaker panels and electrical equipment should be inspected. Any defective parts should be replaced. Any loose wiring should be properly secured.
- Batteries should inspected and tested. Batteries should be in approved boxes or trays and securely fastened.
- All wiring, connectors and contacts should be checked. Wire insulation should be intact and contacts should be secure and clean.

Other Systems

- The fuel tank, filter, fitting and lines should be inspected and serviced on a regular basis. Tanks should be kept free of scale, dirt and water.
- The fresh water system should be flushed and chlorinated.
- All fresh water lines and connections should be checked for tightness. Repairs and or replacements should be made as necessary.
- Mechanical components of all systems should be checked, cleaned and lubricated as necessary for proper operation. These systems include hydraulic trim systems, air systems, anchoring system, bilge and sanitation systems.
- All safety equipment should be checked: life jackets, flares, fire extinguishers, life rafts, life buoys, and any others.
- Radio Equipment, antennas, batteries and backup systems should be checked.
- Covers and upholstery should be inspected and cleaned.
- Any out-dated or damaged equipment should be replaced.

Sailing vessels should have all standing and running rigging and sails inspected. Sails should be cleaned and repairs made as necessary. Winches, blocks, turnbuckles and other mechanical equipment should be properly lubricated.

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Safe Working Practices Regulations, CRC, Vol. XVII, c. 1467
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/050/csa057/csa57.html
- Construction Standards for Small VesselsTP1332
  www.tc.gc.ca/MarineSafety/Tp/TP1332/menu.htm

reporting

Accidents, Pollution

Accident Reporting

Any accident that impairs the seaworthiness of your vessel or involves a casualty, fatality, or disappearance must be reported without delay. Notice of the occurrence must be given by radio communication to a marine radio station, a Marine Communications and Traffic Services (MCTS) Centre, or a Canadian harbour radio station, or by the quickest alternative means available.

When reporting the incident, you are required to give the following information:

1. Identify your ship and any other ship involved in the accident.
2. Describe the nature of the incident.
3. Provide the date, time, and location of the accident.
4. Indicate the number of persons killed, missing, or injured.
5. Report whether the incident has or will obstruct navigation.
6. Report any pollution or potential for pollution.

Within 30 days following the occurrence, the owner or operator is required to submit a *Marine Occurrence/Hazardous Occurrence Report* (TSB 1808/06-94) on the incident, including a statement as to the probable cause of the accident. This form is available on the internet at the address below.

The report should be forwarded to:

TRANSPORTATION SAFETY BOARD OF CANADA
200 Promenade du Portage, 4th Floor, Place du Centre
Gatineau, Québec K1A 1K8
Tel.: (819) 953-1572
Fax: (819) 953-1583
Web: www.tsb.gc.ca

Persons responsible for ships are reminded that penalties may be incurred by failing to report a marine occurrence. The maximum penalty for an offence of not giving notice or filing a report is $2,000 or imprisonment for six months, or both, as determined by the provincial court.

Accident Investigation

The Transportation Safety Board (TSB), an independent agency reporting to Parliament through the Privy Council, investigates selected marine incidents. The mission of the TSB is to advance transportation safety by conducting accident investigations to determine the causes and contributing factors. The TSB identifies safety deficiencies, makes recommendations to eliminate or reduce the deficiencies, and reports publicly on its investigations and findings.

Transport Canada Marine Safety may investigate incidents to identify deficiencies in operational procedures, vessel standards, or crew training. Marine Safety may conduct an investigation if a vessel has been involved in an incident resulting in the loss, destruction, or damage of a vessel that endangers any person, or if an operator or crew acted incompetently in the course of their duties or in breach of laws or regulations.

Following any formal action that Marine Safety may take in relation to an incident, public reports of investigations are published to make the causes of an accident known within the industry and to help prevent similar occurrences.

Pollution Reporting

A clean environment begins with you. A well designed and maintained vessel and safe practices when handling pollutants are the best defences against becoming a polluter. In Canada, rules and regulations support the protection of our aquatic environment. It is an offence to accidentally or wilfully discharge oil, garbage, sewage (depending on location), or other pollutants into Canadian waters.

Polluters are required under law to report any oil spill to the Canadian Coast Guard without delay. A rapid response will usually minimize the overall cost of responding to an incident. Polluters are responsible for clean up costs. A failure to report a spill from your vessel may lead to heavy fines and penalties.

It's up to you to report polluters so they can be held accountable for their actions. If you witness pollution being discharged from any vessel or notice oil or chemical pollution in Canadian waters, contact the Canadian Coast Guard, use channel 16 (MF 2182 kHz) on VHF Marine radio or VHF DSC channel 70 (MF DSC 2187.5 kHz).

You will be asked, if possible, to provide the following information:

1. Your name and contact details.
2. When and where the pollution occurred.
3. The type of discharge or a description of the product.
4. The extent of pollution or area covered.
5. Name of the vessel or other source.

Canada Coast Guard will notify the owner and take steps to rectifying the situation.

Pollution Reporting

Telephone Numbers

NEWFOUNDLAND
1-800-563-2444

P.E.I., NOVA SCOTIA, NEW BRUNSWICK
1-800-565-1633

QUEBEC
1-800-363-4735

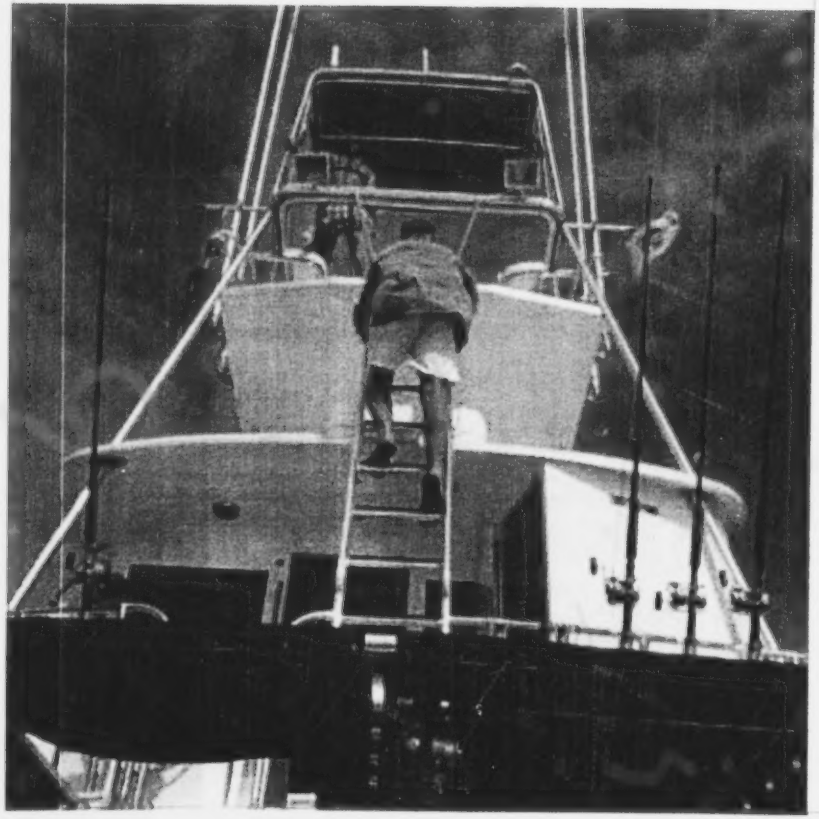
ONTARIO, MANITOBA, SASKATCHEWAN, ALBERTA, NORTHWEST TERRITORIES, NUNAVUT
1-800-265-0237

BRITISH COLUMBIA, YUKON
1-800-889-8852

More Information

To consult your local Transport Canada Centre, please see Appendix 2, page 101.

- *Canada Shipping Act*, Safe Working Practices Regulations, CRC, Vol. XVII, c. 1467
  www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/regulations/050/csa057/csa57.html
- Canadian Coast Guard's Office of Boating Safety
  www.ccg-gcc.gc.ca/obs-bsn/pubs/pme/main_e.htm
- Oil Pollution Prevention Regulations
- Garbage Pollution Prevention Regulations
- Great Lakes Sewage Pollution Prevention Regulations
- Non-Pleasure Craft Sewage Pollution Prevention Regulations
- Pollutant Discharge Reporting Regulations
- *Arctic Waters Pollution Prevention Act* and Regulations



inspection regime

Small Vessel Monitoring and Inspection Program (SVMIP)

The maintenance and safe operation of a vessel is the responsibility of the owner or the owner's authorized representative. To assist the owner and to protect the public, Marine Safety has established the *Small Vessel Monitoring and Inspection Program* (SVMIP). This program is focused on the safety of life, property, and the environment. The program includes:

- A thorough inspection by Marine Safety, called the First or Initial Inspection;
- Annual Self-Inspections by the owner or operator; and
- Spot Checks by Marine Safety and other agencies.

By law, all small commercial vessels must hold a *Notice of Inspection*, issued following a successful first/initial inspection. In addition, for passenger vessels, upon receipt of a declaration of satisfactory annual self-inspection, Marine Safety will provide a confirmation of inspection decal valid for up to one year.

First/Initial Inspection

All small commercial vessels require a thorough inspection by a Marine Safety Inspector to ensure that they are in compliance with safety requirements. This inspection is called a first inspection when carried out on a new vessel and an initial inspection for a vessel that is already in service. It is the responsibility of the owner to contact the nearest Transport Canada Centre to arrange this inspection.

During the inspection, the Marine Safety Inspector will verify that the hull, machinery, electrical, life-saving, navigation, and communication equipment and other safety appliances meet the requirements for your vessel and its intended operation.

The inspector will ensure not only that the vessel and its equipment are fit but also that all persons entrusted with the operation of the vessel are qualified and competent for their respective responsibilities. The owner or operator must be present during the inspection, as the inspector must verify that the crew is sufficient and efficient for the intended operation of the vessel and, in the event of an emergency, able to operate the safety systems.

To fulfill this requirement, it is essential that you have comprehensive knowledge of safe operating practices and the safety requirements of your vessel. Operators are expected to be able to demonstrate that they are capable of proficiently executing safety procedures. For example, you may be asked to demonstrate the retrieval of a man overboard. The inspector may also ask hypothetical questions to test how you would handle certain emergency and exceptional situations. The Marine Safety Inspector is to be satisfied with your knowledge and ability before issuing a certificate to your vessel.

If your vessel does not pass inspection, you will be given a list of deficiencies that must be corrected. Depending on the type of deficiency and the associated risk, the inspector will establish a deadline for correction of the deficiencies. Once deficiencies have been satisfactorily corrected, Marine Safety may re-inspect the vessel for compliance and a *Notice of Inspection* will be issued.

Self Inspection

A self-inspection involves examination of the vessel and its components to the extent necessary to ensure that it meets the requirements. To help you carry out a self-inspection of your vessel a self-inspection checklist and guidance notes have been developed (see Appendix 3, page 102).

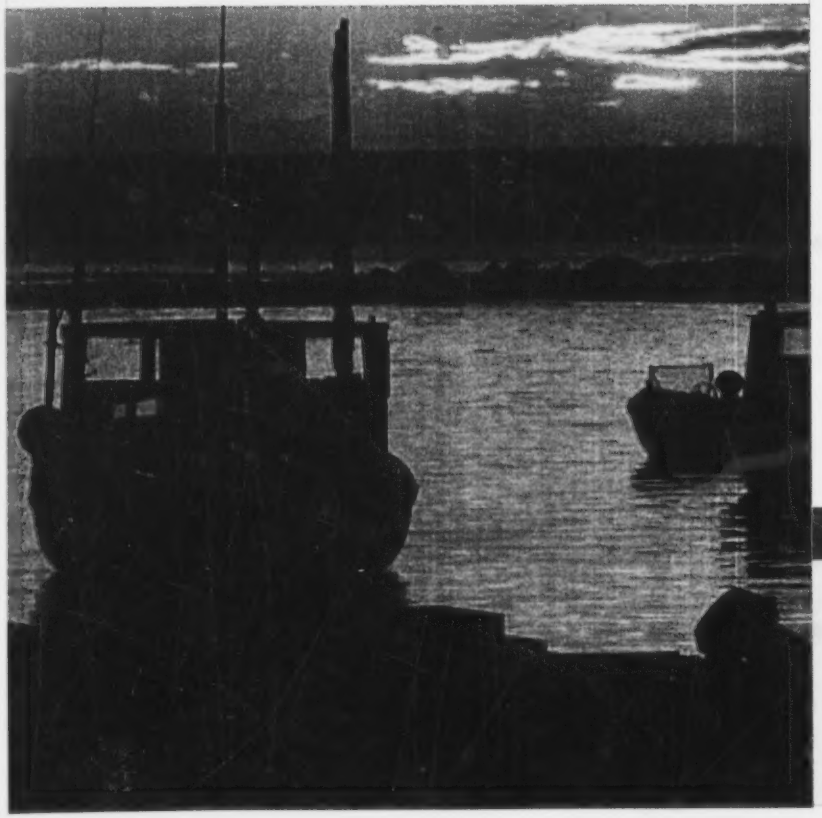
Spot Checks

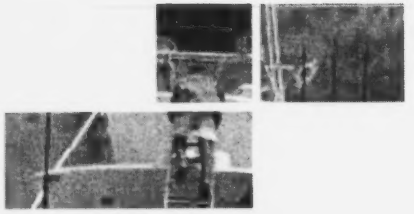
Random spot checks will be carried out by Marine Safety and other authorized agencies to verify that vessels have a valid Notice of Inspection and to ensure that your vessel is safe for you and your passengers and in compliance with the law.

More Information

Please contact your local Marine Safety office to find out the laws and regulations that apply to your particular vessel and situation.

- Transport Canada's Small Commercial Vessels Web site
  www.tc.gc.ca/MarineSafety/CES/Small-Commercial-Vessels/menu.htm
- Self-Inspection Checklist
  www.tc.gc.ca/marinesafety/CES/small-commercial-vessels/Passenger-Vessels/whats-new/checklist.pdf
- Self-Inspection Checklist Guidelines
  www.tc.gc.ca/marinesafety/CES/small-commercial-vessels/Passenger-Vessels/whats-new/checklist-notes.pdf





vessel modification

Structure and Equipment Changes

Vessel and Equipment Changes

You have the responsibility to ensure that equipment and structural modifications do not compromise the freeboard and stability of your vessel or reduce the suitability of your vessel for the working and environmental conditions it may encounter. Any modifications must be in compliance with safety standards and the *Construction Standards for Small Vessel* – TP1332.

Before making alterations to your vessel that may have an impact on vessel safety, you should contact your local Transport Canada Centre. A safety inspector will help you determine whether the proposed modifications are consistent with the construction, equipment, and safety regulations for your vessel's intended area of service.

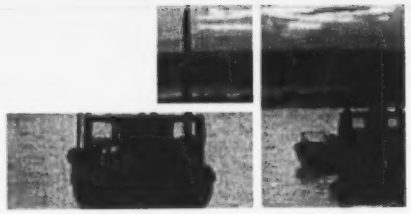
Changing the Area and Type of Operation

A Transport Canada inspector will review the suitability of your vessel for the proposed changes. Any proposed change in the area or type of operation that results in a change in voyage classification will necessitate a re-inspection to ascertain whether the vessel and crew are in compliance with applicable regulations under the new voyage class.

More Information

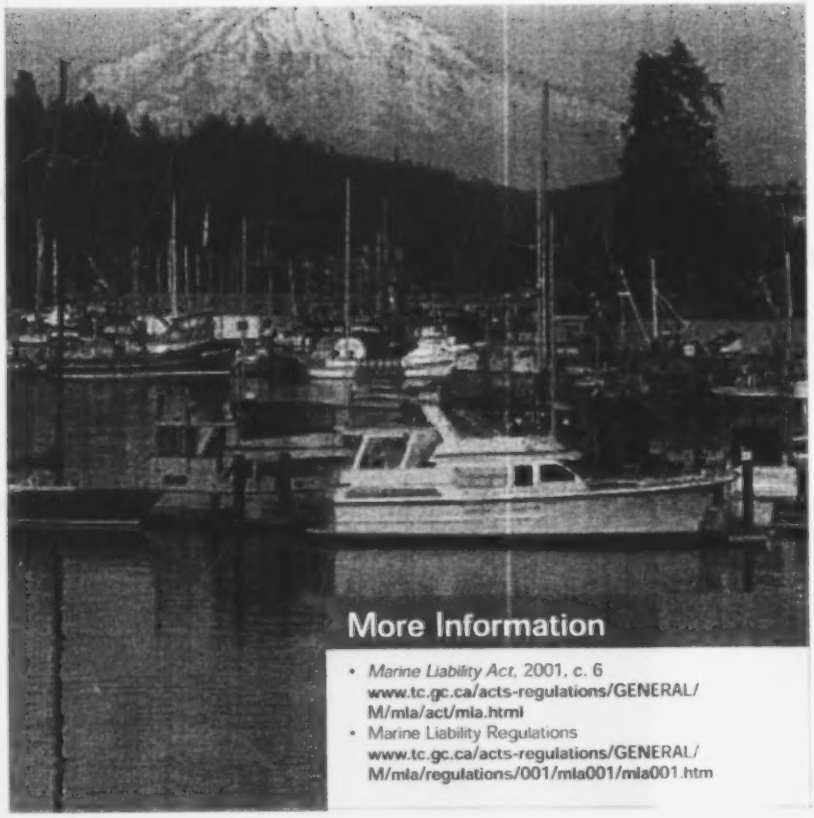
Contact your local Transport Canada Centre to find out the laws and regulations that apply to your particular vessel and situation.

- Construction Standards for Small Vessels TP1332
  www.tc.gc.ca/MarineSafety/Tp/TP1332/menu.htm
- Standards for the Construction and Inspection of Small Passenger Vessels (TP 11717)
  www.tc.gc.ca/MarineSafety/Tp/TP11717/menu.htm
- *Canada Shipping Act* Section 377



administration

Insurance, Business Licence



More Information

- *Marine Liability Act*, 2001, c. 6
  www.tc.gc.ca/acts-regulations/GENERAL/M/mla/act/mla.html
- Marine Liability Regulations
  www.tc.gc.ca/acts-regulations/GENERAL/M/mla/regulations/001/mla001/mla001.htm

Insurance

It is prudent for any business to purchase insurance. Some types of coverage are required by law, others simply make good business sense. It is up to you to make sure you have the adequate and appropriate level of protection.

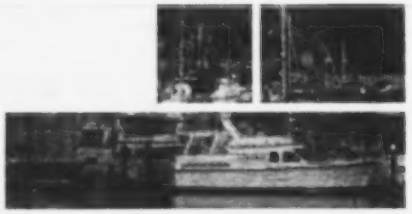
Liability insurance provides coverage for losses if you cause property damage or bodily injury to a passenger. The *Marine Liability Act* (MLA) covers the liability of marine operators in relation to passengers, cargo, pollution, and property damage. It applies to commercial vessels and establishes a maximum liability for operators of $350,000 per passenger. It also prohibits the use of waivers of liability. In addition, the MLA establishes provisions for the apportionment of liability according to the degree of passenger fault or neglect. Regulations necessary to bring the MLA into force are under discussion. Consult your nearest Transport Canada Centre for more information.

Many municipalities and provincial governments require adequate insurance as an integral component of the permitting process. For example, liability coverage is often a pre-condition to securing a business licence.

Business Licenses

Licenses and permits give individuals, corporations, and partnerships the authority to carry on specific business activities. Municipalities normally require your business to be licensed before operating within municipal boundaries.

To determine whether you require a business licence, you should contact the city licensing office or department of your local city hall, territorial, or provincial government. If it is determined that you require a business licence for your intended business activities, you will be advised of the class within which your business falls, as well as the steps required to obtain the licence. You will also be advised of the applicable licence fee. Refer to the blue pages of your telephone book for your local municipal office.



help shape the future

Regulatory Reform

The *Canada Shipping Act* has been overhauled to provide a modernized statutory framework for the Canadian shipping industry that takes into account safety, global standards, changes in marine operational practices and technological advances. Many of the technical details in the old Act will be updated and moved to new regulations and/or standards. This will improve the clarity, consistency, and efficiency of the legislation and ultimately, enhance safety outcomes.

Leading up to the implementation of the *Canada Shipping Act, 2001*, regulations will be developed that will contribute to the economic performance of the marine industry while maintaining safety and protection of the marine environment.

Transport Canada is committed to engaging the marine community in meaningful discussion and working toward a shared vision of regulatory reform that takes into account the needs and concerns of the marine community.

Consultation

Regulations within the framework of the *Canada Shipping Act, 2001* will influence your activities related to commercial shipping, so it is important to make your opinion and interests heard. Good legislation requires active public participation in the development, implementation, and review of regulations, and Transport Canada's responsiveness to consider and integrate advice into the regulatory reform process. We will do our part, but we need your participation.

Contact Information

To assist us in identifying and considering issues of importance to you, please send us your advice, comments and recommendations.

By E-mail:

CSALMMC@tc.gc.ca

By Mail, Telephone or Fax:

Transport Canada
Marine Safety
330 Sparks Street
Ottawa, ON K1A 0N8

Toll free: 1-866-879-9902
National Capital Region: (613) 998-7764
Fax: (613) 991-5670

On the Web:

www.tc.gc.ca/acts-regulations/GENERAL/C/csa/menu.htm

Canadian Marine Advisory Council (CMAC)

The Canadian Marine Advisory Council (CMAC) is a forum for consultation with the marine community on safety, navigation, and marine pollution. The membership includes commercial shippers, fishers, recreational boaters, unions, and government. CMAC is jointly coordinated and chaired by senior members of the Department of Transport, Safety and Security, and the Department of Fisheries and Oceans, Canadian Coast Guard.

CMAC Online

CMAC provides a Web-based application to support consultation and collaboration, allowing registered members to review, discuss and comment on documents posted to the system.

Contact Information

Find out more about CMAC, on the Web at:
www.tc.gc.ca/CMAC/cmacmain.htm

Safety Concerns and Complaints

Marine Safety is responsible for ensuring that commercial shipping in Canadian waters is carried out safely and in compliance with Transport Canada regulations. Safety-related concerns and complaints should be directed to the Transport Canada Centre nearest to you.

Contact Information

You can contact Transport Canada directly on the Web at:
www.tc.gc.ca/MarineSafety/Contact-Us/Contact.htm

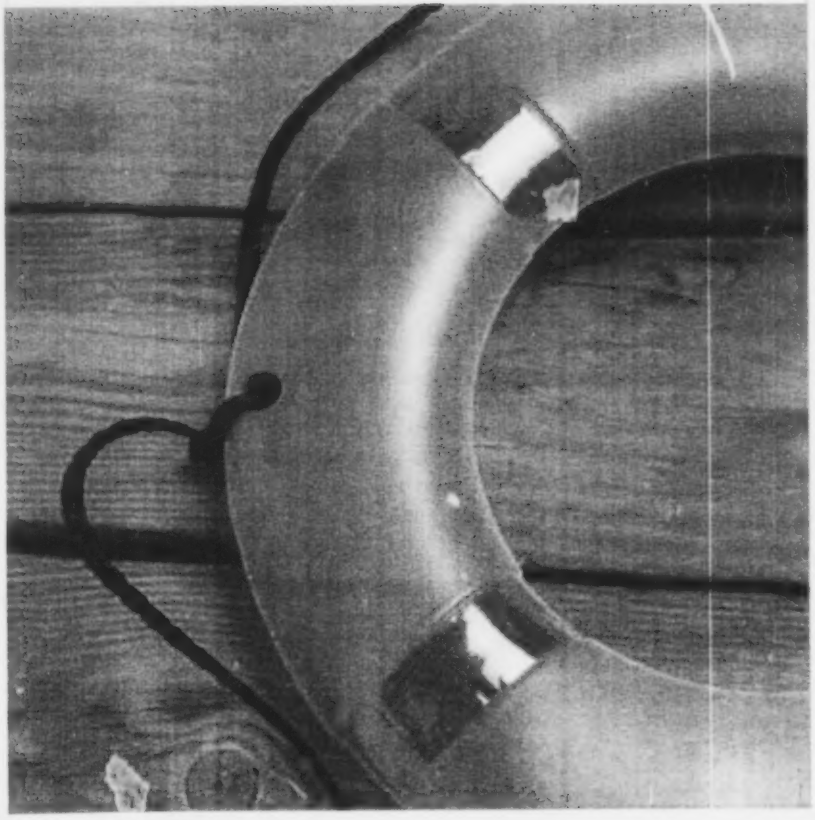
By E-mail:

MarineSafety@tc.gc.ca

By Mail, Telephone or Fax:

Transport Canada
Marine Safety
330 Sparks Street
Ottawa, ON K1A 0N8

Tel.: (613) 991-3135
Fax.: (613) 990-6191



information sources

Forms and Publications

Forms and Certificates

APPLICATION FOR REGISTRY
Form Number: 84-0044

DECLARATION FOR TRANSFER OF REGISTRY
Form Number: 84-0048

NOTICE OF NAME FOR A SHIP OR CHANGE OF NAME OF A SHIP
Form Number: 84-0042

APPOINTMENT OF AUTHORIZED REPRESENTATIVE
Form Number: 84-0035

DESCRIPTION OF SHIP PROPOSED TO BE BUILT
Form Number: 84-0066

BUILDER'S CERTIFICATE AND FIRST TRANSFER OF TITLE
Form Number: 84-0040

APPLICATION FOR A SMALL COMMERCIAL VESSEL LICENCE
Form Number: 84-0166

DECLARATION OF OWNERSHIP/DECLARATION OF TRANSFER OF OWNERSHIP
Form Number: 84-0002

CERTIFICATE OF SURVEY
Form Number: 85-0404

TABULAR METHOD
Form Number: 85-0405

BILL OF SALE
Form Number: 84-0015

REPORT OF CHANGES IN CREW
Form Number: 82-0637A

Publications

Description of Ship Proposed to be Built Form

Report of a Marine Occurrence/Hazardous Occurrence Report
(TSB 1808/06-94)

Internet

Canada Shipping Act Table of Contents
www.tc.gc.ca/acts-regulations/GENERAL/C/CSA/menu.htm

Canada Shipping Act Small Vessel Regulations
WWW.TC.GC.CA/ACTS-REGULATIONS/GENERAL/C/CSA/REGULATIONS/070/CSA076/CSA76.HTML

Marine Safety Home Page
www.tc.gc.ca/MarineSafety/menu.htm

Marine Safety Transport Publications (TPs)
www.tc.gc.ca/MarineSafety/tp/menu.htm

Marine Safety Ship Safety Bulletins
www.tc.gc.ca/MarineSafety/bulletins/toc_e.htm

Marine Safety Site Map
www.tc.gc.ca/MarineSafety/ms-site-map.htm

Marine Safety Contact List
www.tc.gc.ca/marinesafety/CES/small-commercial-vessels/Passenger-Vessels/contacts/menu.htm

Marine Services Online
http://www.marineservices.gc.ca

Marine Safety Review (Newsletter)
www.tc.gc.ca/MarineSafety/MSR/menu.htm

Construction & Equipment Standards (shipshape)
www.tc.gc.ca/marinesafety/CES/menu.htm

Transport Canada Form Search
www.tc.gc.ca/forms/SearchForm.asp

transport canada centres

Regional Offices

Pacific

Transport Canada
Marine Safety
Pacific Region
620 - 800 Burrard Street
Vancouver, BC V6Z 2J8

Tel.: (604) 666-5300
Fax: (604) 666-5444

Prairie and Northern

Transport Canada
Marine Safety
Prairie and Northern Region
344 Edmonton Street
Winnipeg, MB R3C 0P6

Tel.: (204) 984-1624
Fax: (204) 984-8417

Ontario

Transport Canada
Marine Safety
Ontario Region
100 Front Street, South
Sarnia, ON N7T 2M4

Tel.: (519)383-1825
Fax.: (519)383-1997

Québec

Transport Canada
Marine Safety
Québec Region
4e étage, 901 Cap Diamant
Québec, QC G1K 4K

Tel.: (418) 648-4618
Fax: (418) 648 3790

Atlantic Region

Transport Canada
Marine Safety
45 Alderney Drive, 14th Floor
Queen Square, P.O. Box 1013
Dartmouth, N.S. B2Y 4K2

Tel.: (902) 426-932
Fax: 902 426 6657

self-inspection – safety compliance checklist

Note: The checklist and accompanying guidance notes are updated frequently. Please consult the Transport Canada website or Marine Safety office for the most up-to-date copy.

http://www.tc.gc.ca/marinesafety/CES/small-commercial-vessels/Passenger-Vessels/whats-new/checklist.pdf

General Criteria Guidelines

OWNERSHIP PARTICULARS:

Name: Give name of owner and/or operator of vessel.

Address: Indicate mailing address AND principal place of residence if different.

Include telephone number, facsimile number and electronic mail address if available.

File number: For the use of TC only.

VESSEL PARTICULARS:

Name: Registered name if available.

Home Port: Home port and official number if available.

Builder/Year/Custom or Series: Custom – purpose built one-off vessel. Series – stock production boat. Include builder & year built.

Length/Beam/Depth: Fill in appropriate vessel particulars.

Gross Tonnage: Gross tonnage if available and circle appropriate deck description.

Construction Material – Hull: Circle as many as needed to best describe material. (ie, wood and grp if sandwiched)

Construction Material – SS: Circle as many as needed to best describe material. (ie, wood and grp if sandwiched)

Propulsion No. 1: Circle appropriately.

Type/ID No.: Please give manufacture name and/or brief description with units identifying number. (ie, serial no.)

Propulsion No. 2: Circle appropriately.

Type/ID No.: Please give manufacture name and/or brief description with units identifying number. (ie, serial no.)

Auxiliary Propulsion : Circle appropriately (ie, Generator Set, Father & Son Diesel, Diesel Electric)

Type/ID No.: Please give manufacture name and/or brief description with units identifying number. (ie, serial no.)

Voyage Classification: List voyage classification. (ie, home trade, inland waters, minor waters)

Voyage Restrictions: List any restrictions listed on the certificate.

Weather Restrictions: List any weather restrictions listed on the certificate. (ie, max. wind speed, max. wave height)

Other Restrictions: List any additional restrictions not listed above.

Maximum Permissible – Load in kg/lbs & Power in kW/hp provide if readily available.

Maximum Compliment: Maximum number of passengers & crew.

Crewing Requirements/Certificate: List any if information is readily available.

LIFESAVING EQUIPMENT:

Life Raft(s) (Type & Particulars): List number of life raft(s) on board. List brand name, type, carring capacity & insp. date.

Life Jacket(s) (Type & Particulars): List number of life jacket(s) on board. List brand name, type & specify Adult or Child.

Life Buoy(s) (Type & Particulars): List number of life rings on board.

Distress Signals (Type & Particulars): List number of and type. (ie, Parachute Flares, Star Flares, Hand-held Flares, Smoke Signals)

FIREFIGHTING EQUIPMENT:

Portable Extinguisher: Number of each different type.

Fixed Extinguisher: Circle appropriate extinguishing agent type.

Fire Pump: Is the pump a dedicated fire pump or duel purpose with bilge pump?

Circle appropriate and give type and ID number.

INSPECTION PARTICULARS:

Type of Inspection: Circle type of inspection being conducted.

Plans Available: Are there any formal plans available for the vessel in question?

Inspection Location: Where is the inspection being conducted, and date inspection was conducted.

Inspector: Name and home TC office.

Previous Inspection Date: Date previous inspection was completed and list if previous inspection is available.

Have modifications been made since last inspection/spot check?: Compare previous inspection report and comment accordingly.

Any significant hull deterioration?: In the professional opinion of the inspector, does the hull show any deterioration. (ie, rust or rot)

If YES then describe. TC inspector may have to re-inspect with reference to the First/Periodic Inspection.

If YES Transport Canada Marine Safety to be informed before vessel returned to service.

Beaufort Scale

Beaufort Wind Force	Mean Wind Speed in Knots	Limits of Wind Speed in Knots	Descriptive Term	Sea Criterion	Probable Height of Waves in Metres*	Probable Max. Height of Waves in Metres*
	Measured at a height of 10 m above sea level					
0	0	<1	Calm	Sea like a mirror.	–	–
1	2	1–3	Light Air	Ripples with the appearance of scales are formed, but without foam crests.	0.1	0.1
2	5	4–6	Light Breeze	Small waves, still short but more pronounced. Crests have a glassy appearance and do not break.	0.2	0.3
3	9	7–10	Gentle Breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered white horses.	0.6	1
4	13	11–16	Moderate Breeze	Small waves, becoming longer. Fairly frequent white horses.	1	1.5
5	19	17–21	Fresh Breeze	Moderate waves, taking a more pronounced long form; many white horses are formed. (Chance of some spray.)	2	2.5
6	24	22–27	Strong Breeze	Large waves begin to form; the white foam crests are more extensive everywhere. (Probably some spray.)	3	4
7	30	28–33	Near Gale	Sea heaps up and white foam from breaking waves begin to be blown in streaks along the direction of the wind.	4	5.5
8	37	34–40	Gale	Moderately high waves of greater length; the edges of crests begin to break into spindrift. The foam is blown in well marked streaks along the direction of the wind.	5.5	7.5
9	44	41–47	Strong Gale	High waves. Dense streaks of foam along the direction of the wind. Crests begin to topple, tumble and roll over. Spray may affect visibility.	7	10
10	52	48–55	Storm	Very high waves with long overhanging crests. The resulting foam in great patches is blown in dense white streaks along the direction of the wind. The whole surface of the sea takes on a white appearance. Tumbling of the sea becomes heavy and shock-like. Visibility affected.	9	12.5
11	60	56–63	Violent Storm	Exceptionally high waves. (Small and medium sized ships may be for a time lost to view behind the waves.) The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere the edges of the waves' crests are blown into froth. Visibility affected.	11.5	16
12	–	64 and Over	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray. Visibility is seriously affected.	14 or Over	–

(*) These columns are added as a guide to show roughly what may be expected in the open sea, remote from land. In enclosed waters, or when near land off-shore wind, wave heights will be smaller, and the water steeper.

General Criteria Guidelines

OWNERSHIP PARTICULARS:

Name: Give name of owner and/or operator of vessel.

Address: Indicate mailing address AND principal place of residence if different.

Include telephone number, facsimile number and electronic mail address if available.

File number: For the use of TC only.

VESSEL PARTICULARS:

Name: Registered name if available.

Home Port: Home port and official number if available.

Invidual/Yeal/Custom or Series: Custom – purpose built one-off vessel. Series – stock production boat. Include builder & year built.

Length/Beam/Depth: Fill in appropriate vessel particulars.

Gross Tonnage: Gross tonnage if available and circle appropriate deck description.

Construction Material – Hull: Circle as many as needed to best describe material. (ie. wood and grp if sandwiched)

Construction Material – SS: Circle as many as needed to best describe material. (ie. wood and grp if sandwiched)

Propulsion No. 1: Circle appropriately.

Type/ID No.: Please give manufacture name and/or brief description with units identifying number. (ie. serial no.)

Propulsion No. 2: Circle appropriately.

Type/ID No.: Please give manufacture name and/or brief description with units identifying number. (ie. serial no.)

Auxiliary Propulsion : Circle appropriately (ie, Generator Set, Father & Son Diesel, Diesel Electric)

Type/ID No.: Please give manufacture name and/or brief description with units identifying number. (ie. serial no.)

Voyage Classification: List voyage classification. (ie. home trade, inland waters, minor waters)

Voyage Restrictions: List any restrictions listed on the certificate.

Weather Restrictions: List any weather restrictions listed on the certificate. (ie. max. wind speed, max. wave height)

Other Restrictions: List any additional restrictions not listed above.

Maximum Permissible – Load in kg/lbs & Power in kW/hp provide if readily available.

Maximum Compliment: Maximum number of passengers & crew.

Crewing Requirements/Certificate: List any if information is readily available.

LIFESAVING EQUIPMENT:

Life Raft(s) (Type & Particulars): List number of life raft(s) on board. List brand name, type, carring capacity & insp. date.

Life Jacket(s) (Type & Particulars): List number of life jacket(s) on board. List brand name, type & specify Adult or Child.

Life Buoy(s) (Type & Particulars): List number of life rings on board.

Distress Signals (Type & Particulars): List number of and type. (ie, Parachute Flares, Star Flares, Hand-held Flares, Smoke Signals)

FIREFIGHTING EQUIPMENT:

Portable Extinguisher: Number of each different type.

Fixed Extinguisher: Circle appropriate extinguishing agent type.

Fire Pump: Is the pump a dedicated fire pump or duel purpose with bilge pump?

Circle appropriate and give type and ID number.

INSPECTION PARTICULARS:

Type of Inspection: Circle type of inspection being conducted.

Plans Available: Are there any formal plans available for the vessel in question?

Inspection Location: Where is the inspection being conducted, and date inspection was conducted.

Inspector: Name and home TC office.

Previous Inspection Date: Date previous inspection was completed and list if previous inspection is available.

Have modifications been made since last inspection/spot check?: Compare previous inspection report and comment accordingly.

Any significant hull deterioration?: In the professional opinion of the inspector, does the hull show any deterioration. (ie, rust or rot)

If YES then describe. TC inspector may have to re-inspect with reference to the First/Periodic Inspection.

If YES Transport Canada Marine Safety to be informed before vessel returned to service.

Beaufort Scale

Beaufort Wind Force	Mean Wind Speed in Knots	Limits of Wind Speed in Knots	Descriptive Term	Sea Criterion	Probable Height of Waves in Metres*	Probable Max. Height of Waves in Metres*
	Measured at a height of 10 m above sea level					
0	0	<1	Calm	Sea like a mirror.	–	
1	2	1-3	Light Air	Ripples with the appearance of scales are formed, but without foam crests.	0.1	0.1
2	5	4-6	Light Breeze	Small wavelets still short but more pronounced. Crests have a glassy appearance and do not break.	0.2	0.3
3	9	7-10	Gentle Breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered white horses.	0.6	1
4	13	11-16	Moderate Breeze	Small waves, becoming longer. Fairly frequent white horses.	1	1.5
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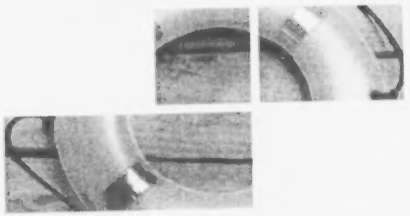
7	30	28-33	Near Gale	Sea heaps up and white foam from breaking waves begin to be blown in streaks along the direction of the wind.	4	5.5
8	37	34-40	Gale	Moderately high waves of greater length; the edges of crests begin to break into spindrift. The foam is blown in well-marked streaks along the direction of the wind.	5.5	7.5
9	44	41-47	Strong Gale	High waves. Dense streaks of foam along the direction of the wind. Crests begin to topple, tumble and roll over. Spray may affect visibility.	7	10
10	52	48-55	Storm	Very high waves with long overhanging crests. The resulting foam, in great patches, is blown in dense white streaks along the direction of the wind. The whole surface of the sea takes on a white appearance. Rolling of the sea becomes heavy and shocklike. Visibility affected.	9	12.5
11	60	56-63	Violent Storm	Exceptionally high waves. (Small and medium sized ships may be for a time lost to view behind the waves.) The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere the edges of the wave crests are blown into froth. Visibility affected.	11.5	16
12	–	64 and Over	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray. Visibility is very seriously affected.	14 or Over	–

(*) These values are offered as a guide to the kinds of sea which may be encountered in the open sea, remote from land. In enclosed waters or where shoal depths restrict wave height, waves are smaller, and the water steeper.



Standard Marine Distress

signals

Radio

Radiotelephone
Call: "Mayday!"
Give: name and position
Use: 156.8 MHz-Ch16
2182 kHz; or use alarm signal. VHF-DSC

406 MHz
Emergency position indicating radiobeacon
EPIRB

Code Flags

N over C

Distress Cloth

Ball over or under Square

Sound Signals

Continuous: Foghorn, bell, whistle.

1-minute intervals: Gun or any explosive

Flashlight

Arm Signal

Do not use near helicopter (different meaning)

Flame on Vessel

as from burning tar, oil in barrel, etc.

Dye Marker

Flares

Type A: Parachute rocket

Type B: Multi-star rocket

Type C: Hand-held

Type D: Buoyant or hand-held orange smoke

Lateral Buoys

PORT (*green can*)
Keep this buoy on your port (left) side when proceeding in the upstream direction.

BIFURCATION
(*red and green bands*)
You may pass this buoy on either side when proceeding in the upstream direction, but the main or preferred channel is indicated by the colour of the topmost band. For example: Keep this buoy on your starboard (right) side.

PORT (*green pillar*)
Keep this buoy on your port (left) side when proceeding in the upstream direction.

PORT (*green spar*)
Keep this buoy on your port (left) side when proceeding in the upstream direction.

STARBOARD (*red spar*)
Keep this buoy on your starboard (right) side when proceeding in the upstream direction.

STARBOARD (*red conical*)
Keep this buoy on your starboard (right) side when proceeding in the upstream direction.

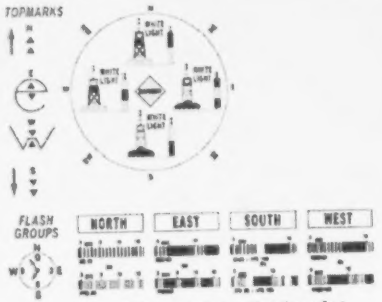
STARBOARD (*red pillar*)
Keep this buoy on your starboard (right) side when proceeding in the upstream direction.

Fairway

This buoy indicates safe water. Used to mark landfalls, channel entrances or channel centres. It may be passed on either side but should be kept to the port (left) side when proceeding in either direction.

Isolated Danger

An isolated danger buoy is moored on, or above, an isolated danger that has navigable water all around it. Consult the chart for information concerning the danger, (dimensions, depth, etc.). May be used to mark natural dangers such as small shoals or obstructions such as wrecks.



A cardinal buoy indicates that the safest water exists to the direction it indicates (ex: a north cardinal buoy indicates that the safest water exists to the north)

Cardinal Buoys

DESCRIPTION

- Yellow and black
- White – flash characters indicated below (if equipped)
- Two conical topmarks, direction of points have significance
- Black topmark cones point to the black portion(s) of the buoy
- Lettered – no numbers
- White retroreflective material

Transport Canada gratefully acknowledges having used some of the cartographic material from the Canadian Hydrographic Service.